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ORIGINAL ARTICLES.

THE SPUTUM POSITIVE OR FATAL CASES OF PULMONARY TUBERCULOSIS AS THE SOURCE OF SECONDARY CASES OF TUBERCULOSIS.

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Assistant County Medical Officer (Tuberculosis) of Worcestershire.

At the outset it is necessary to point out that the deductions in this paper are not put forward as statistically proved. It is realized that very considerably larger numbers of cases would be necessary for this purpose at each stage of the analysis. The care with which the facts have been collected, the fact that all the data relate to one area and have been collected by one investigator, afford some justification for the belief that the deductions made may be fairly reliable pointers to the parts played by infectious cases of different age groups in the production of secondary cases of tuberculosis in infected households.

All the data upon which this paper is based have been collected in the part of Worcestershire for which the writer acts as tuberculosis officer. This area is the northern part of Worcestershire. It includes Oldbury, Halesowen, Redditch, Bromsgrove, Kidderminster, and the intervening rural districts. The population of this area is approximately 160,000, and the main industries are metal working, textile manufactures, and agriculture.

The notifications of tuberculosis in the Administrative County of Worcester during the three-year period 1926 to 1928 were as follows:

1. Pulmonary Tuberculosis.

Age group	5-15	15-25	25-35	35-45	45 and up
Cases	90	268	241	159	173

2. NON-PULMONARY TUBERCULOSIS.[1]

Age group ...	0-5	5-15	15-25	25-35	35-45	45 and up
Cases ...	103	148	99	52	23	20

The comparative prevalence of tuberculosis among "young adults" will be noted.

In considering the sputum-positive case of pulmonary tuberculosis as a source of secondary cases of tuberculosis, it would seem rational to regard each sputum-positive case as a focus around which there are zones of infection of varying intensity. One could arbitrarily define three zones:

Zone A.—The structurally separate dwelling in which the infectious case lives. Individuals sharing this dwelling are referred to as "house contacts."

Zone B.—The workshop or room in which the infectious case follows his or her employment. Individuals habitually working in the same room may be referred to as "work contacts."

Zone C.—Includes all other places to which the sputum-positive case may go. This may be referred to as the "zone of casual contact," and it is in this zone that a great proportion of the population become tuberculized.

During the two-year period, January 1, 1927, to January 1, 1929, the writer kept records of the numbers of people who, for a part or for the whole of the period, habitually lived in Zones A and B of each known sputum-positive case in the given area.

During this period there were in the area 387 known sputum-positive cases of pulmonary tuberculosis: Male cases, 225; female cases, 162. Taking their age at notification, they fell into the following age groups:

Age group	5-15	15-25	25-35	35-45	45 and up	Total
Number of cases ...	14	128	126	66	53	387

The number of individuals who came into Zones A and B of these infectious cases during the two-year period were:

Zone A (house contacts), 1,673 (1·05 per cent. of population of area).

Zone B (work contacts), 10,747 (6·75 per cent. of population of area).

It should be borne in mind that although the proportion of the population in Zone A is so small comparatively, approximately 40 per cent. of *all cases of tuberculosis* originate in this zone. Thus in case-taking, where tuberculosis is suspected, no history is complete until it has been ascertained whether there has been any known contact with an infectious case of pulmonary tuberculosis, and if so, in which zone the contact occurred. In my opinion the proportion of definite cases of tuberculosis in a given area, for which a definite history of

[1] For the purpose of this paper, all forms of tuberculosis among patients under five years of age are classified as non-pulmonary tuberculosis.

Zone A exposure to an infectious or fatal case of pulmonary tuberculosis is obtained, is practically a constant.

In addition, there are grounds for believing that this proportion only varies within comparatively small limits even for quite separate districts. Making the assumption that the proportion of all cases of tuberculosis which arise in Zone A is a "constant" for any given area, which only changes slowly over a long period of time, it is possible to estimate the secondary case-producing power in Zone A of sputum-positive cases of pulmonary tuberculosis at different ages. For this purpose the writer ascertained in a series of 1,011 cases of definite notified tuberculous disease:

1. Whether there was a history of contact in Zone A with a case of pulmonary tuberculosis (either sputum positive or fatal).

2. If there was such a history of Zone A contact, the age of the primary case of phthisis with which there had been contact.

3. The age at notification of each of the 1,011 cases in the series.

The series of 1,011 cases can be set out as follows:

	Zone A Contact History.	*Arising in Zones B and C.*	*Total.*	*Percentage with Zone A Contact.*
Pulmonary tuberculosis	325	399	724	44·9 per cent.
Non-pulmonary tuberculosis ...	98	189	287	34·1 per cent.
All forms of tuberculosis	423	588	1,011	41·8 per cent.

These 1,011 cases have been tabulated by age groups. Each age group has been again divided, in order to show the number of cases presumably caused by each of five age groups of primary infectious cases, and also the number of cases presumably caused by infection in Zones B and C. Each number in the table is also expressed as a percentage of the total number of cases in the same age group. Table I. gives this information for the 724 cases of pulmonary tuberculosis. Table II. gives the same information for the 287 cases of non-pulmonary tuberculosis.

Application of the percentages in Table I. to the notifications of pulmonary tuberculosis in Worcestershire for the period 1926-28 inclusive gives a table (Table III.) which shows the proportion of cases in each age group of pulmonary notifications which are attributable to home infection by sputum-positive or fatal cases of phthisis belonging to one of five age groups—5-15, 15-25, 25-35, 35-45, and 45 years and up.

TABLE I.—724 CASES OF PULMONARY TUBERCULOSIS.

Presumed Source of Infection.		*Age Groups of Secondary Cases of Pulmonary Tuberculosis.*									
		5-15.		15-25.		25 35.		35-45.		45 and up.	
		Cases.	*Per-centage.*	*Cases.*	*Per-centage.*	*Cases.*	*Per-centage.*	*Cases.*	*Per-centage.*	*Cases.*	*Per-centage.*
Zone A: Age groups of presumed infecting cases.	5-15	5	6·2	1	0·4	0	—	0	—	0	—
	15-25	8	9·8	50	21·9	22	11·2	8	6 2	15	16·9
	25-35	18	22·1	21	9·2	26	13·3	22	16·9	6	6·7
	35-45	18	22·1	16	7·0	8	4·1	21	16·2	4	4·5
	45 and up	3	3·7	23	10·1	12	6·1	12	9·2	6	6·7
Zones B and C		29	36·1	117	51·4	128	66·3	67	51·5	58	65 2
Zones A, B, and C (*i.e.*, totals)		81	100	228	100	196	100	130	100	89	100

TABLE II.—287 CASES OF NON-PULMONARY TUBERCULOSIS.

Presumed Source of Infection.		*Age Groups of Secondary Cases of Non-pulmonary Tuberculosis.*									
		0-5.		5-15.		15-25.		25-35.		35-45.		45 and up.	
		Cases.	*Per-centage.*	*Cases.*	*Per-centage.*	*Cases.*	*Per-centage.*	*Cases.*	*Per-centage.*	*Cases.*	*Per-centage.*	*Cases.*	*Per-centage.*
Zone A: Age groups of presumed infecting cases.	5-15	1	1·2	0	—	0	—	0	—	0	—	0	—
	15-25	9	10·7	8	7·9	5	9·1	1	3·7	0	—	2	22·2
	25-35	26	30·9	14	13·9	4	7·3	1	3·7	1	9·1	0	—
	35-45	5	6·0	7	6·9	2	3·6	1	3·7	0	—	0	—
	45 and up	1	1·2	3	3·0	3	5·5	3	11·1	0	—	1	11 1
Zones B and C		42	50·0	69	68·3	41	74·5	21	77·8	10	90·9	6	66·7
Zones A, B, and C (*i.e.*, totals) ...		84	100	101	100	55	100	27	100	11	100	9	100

In a similar way application of the percentages in Table II. to the notifications of non-pulmonary tuberculosis in Worcestershire during the three years 1926-28 gives Table IV. Table IV. gives the proportions of non-pulmonary tuberculosis, notified in Worcestershire during the given three-year period, which show a history of exposure to infection in Zone A by the five different age groups of primary infectious cases of phthisis.

TABLE III.

	Age Group of Infecting Cases.	*Age Group of Secondary Pulmonary Tuberculosis.*				
		5-15.	15-25.	25-35.	35-45.	45 and up.
Proportional amounts of tuberculosis in Zone A attributable to each age group of primary infectious case of phthisis.	5-15	5·58	1·07	—	—	—
	15-25	8·82	58·69	26·99	9·86	29·24
	25-35	19·89	24·66	32·05	26·87	11·59
	35-45	19·89	18·76	9·88	25·76	7·79
	45 and up	3·33	27·07	14·70	14·63	11·59

TABLE IV.

	Age Group of Infecting Cases.	*Age Group of Secondary Non-pulmonary Tuberculosis.*					
		0-5.	5-15.	15-25.	25-35.	35-45.	45 and up.
Proportional amounts of tuberculosis in Zone A attributable to each age group of primary infectious case of phthisis.	5-15	1·24	—	—	—	—	—
	15-25	11·02	11·69	9·01	1·92	—	4·44
	25-35	31·83	20·57	7·23	1·92	2·09	—
	35-45	6·18	10·21	3·56	1·92	—	—
	45 and up	1·24	4·44	5·45	5·77	—	2·22

By combining Tables III. and IV. we get Table V., which shows the proportional amounts of all forms of tuberculosis (in the correct age-group incidence for Worcestershire) due to Zone A infection by sputum-positive cases of the age groups 5-15, 15-25, 25-35, 35-45, and 45 years and up.

TABLE V.

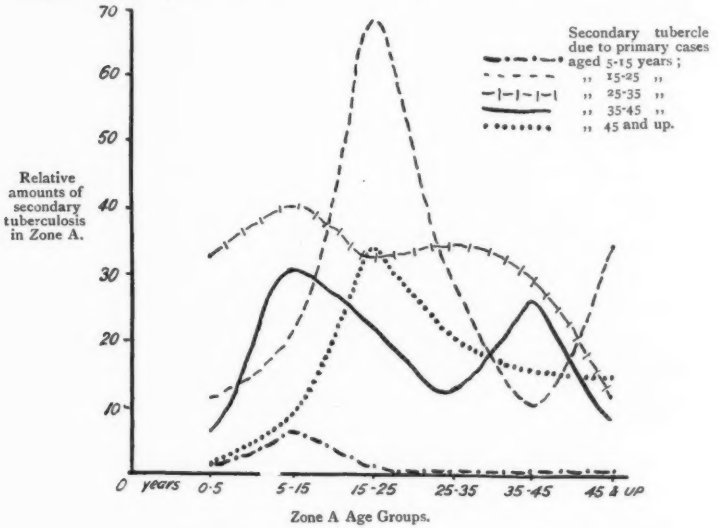
	Age Group of Infecting Cases.	*Age Groups of Secondary Tuberculosis (All Forms).*						*Total Amount of Tuberculosis due to Each Age Group of Infectious Cases of Phthisis.*
		0-5.	5-15.	15-25.	25-35.	35-45.	45 and up.	
Proportional amounts of all forms of tuberculosis arising in Zone A, due to each of the given age groups of infectious cases of phthisis.	5-15	1·24	5·58	1·07	—	—	—	7·89
	15-25	11·02	20·51	67·70	28·91	9.86	33·68	171·48
	25-35	31·83	40·46	31 89	33·97	28·96	11·59	178·70
	35-45	6·18	30·10	22·32	11·80	25·76	7·79	103.95
	45 and up	1·24	7·77	32·52	20·47	14·63	13·81	90·44

We are now in a position to compare the capacity for producing secondary cases of tuberculosis, at different ages, of the five different age groups of infectious cases of phthisis. In order to facilitate this comparison, Table V. has also been expressed graphically. (See Graph I.)

It is apparent that sputum positive or fatal cases of phthisis of the age group 25-35 years produce the greatest amount of secondary tuberculosis in Zone A. Primary cases of this age group cause secondary

GRAPH I.—SECONDARY TUBERCULOSIS IN ZONE A.

The graph shows the proportional amounts of secondary tuberculosis in each age group of Zone A contacts, caused by infectious cases of phthisis of the five given age groups.



cases fairly evenly in the first four age groups, with a slight predominance of case production at the age of 5-15 years. Over the age of 45 years there is less case production due to the 25-35 years primary case. The primary cases aged 15-25 cause nearly as much secondary tuberculosis as the former age group of primary cases. The secondary cases due to the 15-25 years age group of primary infectious cases occur mainly in the age groups 15-25 years and 45 years and up. The 35-45 years age group of primary cases cause a considerably smaller amount of secondary tuberculosis in Zone A. This age group of primary cases causes most of its secondary cases in the age groups 5-15 years and 35-45 years (its own age group). Infectious cases over

45 years of age have their greatest case production in the age group 15-25 years, and after this age there is a gradual decline in the numbers of secondary cases. Infectious cases aged 5-15 produce the smallest number of secondary cases, and those almost entirely in the same age group as themselves.

It will be realized that the accompanying figures only represent the state of affairs in Worcestershire, as the relative amount of secondary tuberculosis produced by any age group of infectious cases, compared with the amount of secondary tuberculosis caused by infectious cases of phthisis in another age group, will depend greatly upon the relative numbers of infectious cases in each age group living in the area. In order to compare the case-producing capacity of a single infectious case in each of the five age groups, it will be necessary to make the correct allowance for the varying numbers of infectious cases alive, during a definite period of time, in the different age groups.

It has been previously stated that during a two-year period there were in the given area of Worcestershire 387 infectious cases. The numbers in the different age groups were as follows:

Age group	5-15	15-25	25-35	35-45	45 years and up
Number of cases ...	14	128	126	66	53

Thus by using the number of infectious cases in each age group as a denominator, with the secondary case production due to the same age group of infectious cases as a numerator, we reduce the *comparative amounts of secondary tuberculosis* given in Table V. to *indices of secondary case production* in Zone A per single infectious case in each age group. Each of these indices will be referred to as the Zone A case-producing index (abbreviation: Zone A c.p. index). Table VI. gives the complete table of Zone A c.p. indices.

TABLE VI.

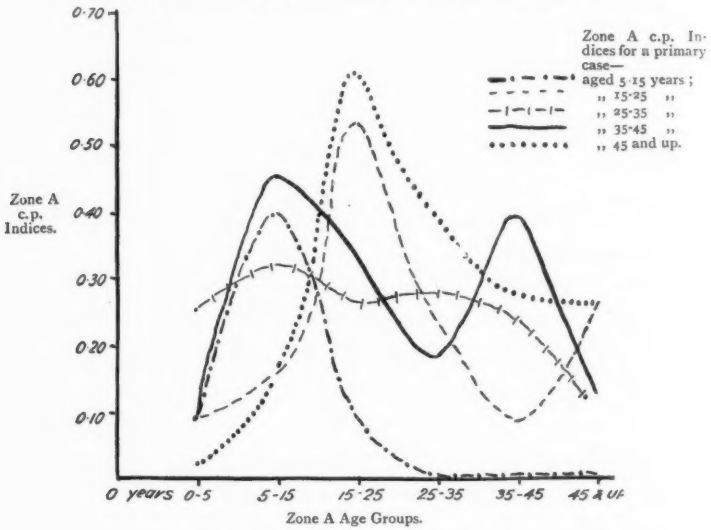
	Age Group of Infecting Cases.	*Secondary Tuberculosis—Age Groups.*						*Total Zone A (C.P.) Index for Each Age Group of Infectious Cases.*
		0-5.	5-15.	15-25.	25-35.	35-45.	45 and up.	
Indices of secondary case production in Zone A for each given age group of primary infectious case of phthisis.	5-15	0·09	0·40	0·08	—	—	—	0·56
	15-25	0·09	0·16	0·53	0·23	0·08	0·26	1·34
	25-35	0·25	0·32	0·26	0·27	0·23	0·09	1·42
	35-45	0·09	0·45	0·33	0·18	0·39	0·12	1·58
	45 and up	0·02	0·16	0·61	0·39	0·27	0·26	1·71

Table VI. has also been expressed graphically (see Graph II.). By means of this table the secondary case-producing power of a single

infectious case in each group can be compared with true perspective. It will be noticed that the curves for the same age group of infectious cases have the same general characteristics in Graphs I. and II.; the relative importance of the curves for the different age groups of infectious cases is, however, modified in Graph II. The total Zone A c.p. index for each age group of infectious cases puts the five age groups in the following order as regards the secondary case-producing capacity of a single infectious case in each age group.

GRAPH II.—THE ZONE A CASE-PRODUCING INDICES.

The graph shows the secondary case producing capacity of a single infectious case of phthisis belonging to each of the five given age groups.



1. Infectious case age 45 years and up: Total Zone A c.p. index, 1·71.
2. Infectious case age 35-45 years: Total Zone A c.p. index, 1·58
3. Infectious case age 25 35 years: Total Zone A c.p. index, 1·42
4. Infectious case age 15-25 years: Total Zone A c.p. index, 1·34.
5. Infectious case age 5-15 years: Total Zone A c.p. index, 0·56.

Thus the dangers of secondary case production would appear to increase with the age of the infectious case. If this is accepted, it is probably due to the fact that the chronicity of pulmonary tuberculosis tends to increase with an increase in the age at the onset of the disease.

From Table VI. and Graph II. it is possible to make the following deductions:

1. Secondary cases are most likely to occur in Zone A at the age of 0-5 years when the primary case was 25-35 years of age.

2. Secondary cases are most likely to occur in Zone A at the age 5-15, when the primary case was 35-45 years of age, but the probability of secondary cases at this age is only slightly less when the primary case was either 5-15 years of age or 25-35 years of age.

3. Secondary cases in Zone A occurring at the age of 15-25 years are the most likely when the primary infectious case was either 15-25 years of age or over 45 years of age.

4. Secondary cases in Zone A occurring at the age of 25-35 years are most likely when the primary case was over 45 years of age.

5. Secondary cases in Zone A occurring at the age of 35-45 years are most likely when the primary case was also 35-45 years of age.

6. The probability of secondary cases occurring in Zone A over 45 years of age is about equal where the primary case was aged 15-25 and where the primary case was aged 45 years and up.

While it is possible that these deductions are only true for secondary tuberculosis occurring in Zone A in Worcestershire, the writer thinks it quite probable that they will hold for other areas, and that for the following reasons.

The secondary case production in the home at different ages depends upon:

1. The infectivity of the primary case.

2. The closeness of association between the primary case and the various age groups of contacts represented by the other members of the household.

3. The numbers of each age group in the household.

As regards 1, the infectivity of the primary case (on the average) is probably associated with the age of the primary case. As regards 2, the closeness of association between the primary case and different age groups of contacts depends upon the age group of the primary case. For example, given an infectious case aged 35-45 years, the close association in the household will be between the marriage partner and the children of the marriage; or if the primary case is unmarried, the close association will be with brothers and sisters; hence the age group of primary case 33-45 will be constantly closely associated with the age groups of contacts 5-15 and 35-45. Similarly as regards (3), the constitution of a household is in part governed by the age of any single member. For example, if the primary case is aged 15-25 years, the household is likely to consist of brothers and sisters also aged

15-25, and parents aged 45 years and up; whereas if the primary case is aged 25-35 years, the household is likely to consist of either a marriage partner of about the same age and young children mainly in the 0-5 and 5-15 groups, or of brothers and sisters of the same age group with parents in the over 45 group, the former contingency being the more likely.

Accordingly in the writer's opinion there is no reason why Table VI. should not be applicable (subject to its statistical limitations) to most other areas, the exceptions being those areas which have a population whose age distribution differs very radically from the general mode.

The intention of this paper is not so much to dogmatize on the actual results, which rest only on a comparatively small series of cases, as to illustrate *a method* by which this aspect of the epidemiology of pulmonary tuberculosis may be analyzed in any given area.

ORTHOPÆDIC ASPECTS OF SURGICAL TUBERCULOSIS.

By J. B. BARNETT,
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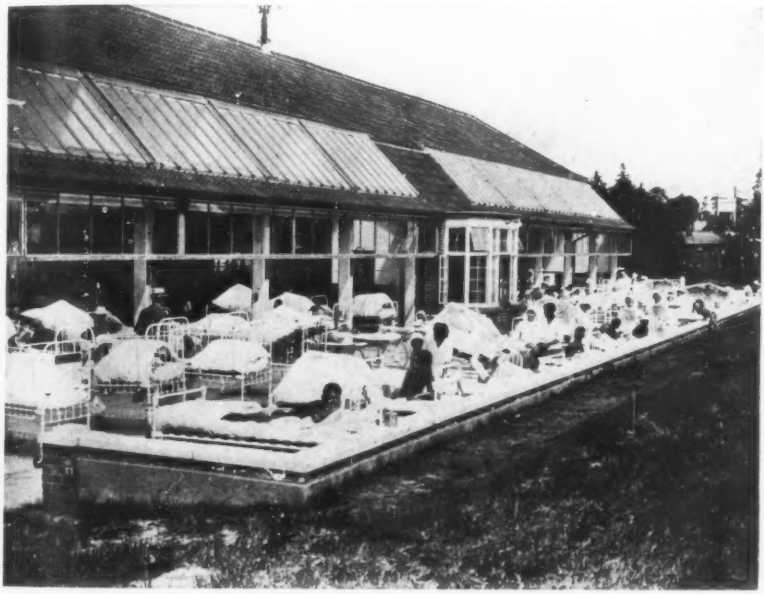
A GENERATION ago, the operative treatment of surgical tuberculosis held the field, with the results so bad that the newer conservative methods, in country hospitals, soon proved overwhelmingly superior. The causes of operative failure in those cases are, of course, now obvious. Tuberculosis is a general disease with local manifestations, and the patient's general condition must be good if operative disaster is to be avoided. Tuberculosis must be treated away from towns, with their smoke screen, foul air and overcrowding.

The pendulum is now swinging the other way, from purely conservative methods to conservatism with selective operations superadded. The French have a happy phrase for this: they call such a surgeon an "Interventionist." This increasing vogue for operative interference is due entirely to the relative failure of conservative methods in one of several particulars. Conservatism, at the best, is a prolonged ordeal for the patient, extending over one to five or more years, an economic factor not to be despised in these penurious days. Anything, then, which will shorten treatment, while giving equal or better results, is to be welcomed. The replacement of crutches and walking instruments, too, by stabilizing operations is a joy and a relief, especially to

girls or women, and it cannot be denied that too little attention has been paid in the past, in too many instances, to the essential function of a limb in the cured stage.

Consider what the patient expects from hospital treatment—a painless, useful, æsthetic limb. Consider also what he, or she, so often obtains—a weak, frequently painful limb, subject to abscess formation, sinuses and relapse, a gait rendered awkward in the extreme by patten, Thomas' splint, and crutches. It would be hardly fair to exhibit this as



TUBERCULOUS CHILDREN UNDERGOING HELIOTHERAPY.

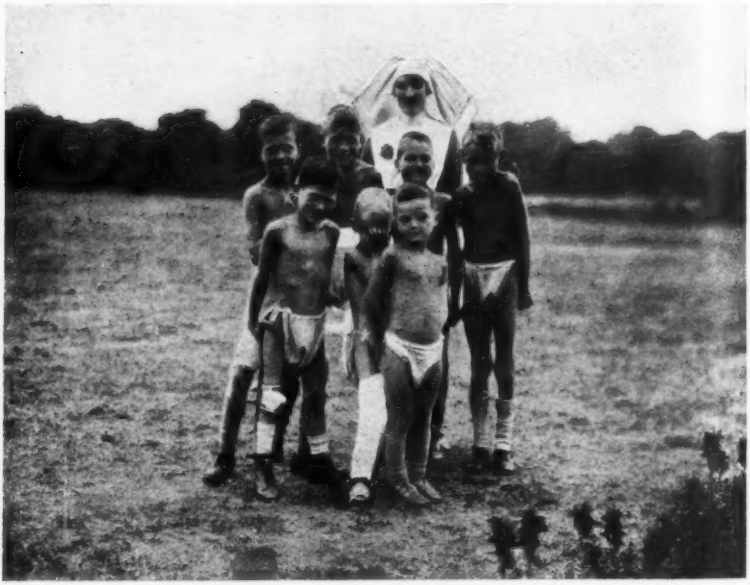
This illustration indicates one of four ward units, and shows something of the life of the tuberculous children at the County Branch of the Royal National Orthopædic Hospital.

typical of a late coxalgia, but it cannot be denied that under classical methods of treatment, this fairly represents one period at least of the patient's progress toward recovery. It is to benefit this type of case that modern orthopædic surgery is directed.

It seems to have been forgotten that the only cure of inflammation in bone is by sclerosis. Long continued extension and external splinting, tend to produce atrophy and so render cure a prolonged process, and sometimes even problematical. To put it shortly, extension, recumbency, and total lack of weight-bearing should be used for the relief of acute symptoms, and not used as a curative measure, in the sub-

acute stage. I should like to illustrate this tendency by describing some of the methods in use at the Country Branch of the Royal National Orthopædic Hospital at Stanmore, as applied to hip disease, spinal caries, and tuberculosis of the knee.

To take *coxalgia* first: the patient in the acute stage is nursed supine, and weight extension applied to relieve pain and spasm and to reduce deformity. As soon as the disease becomes "quiet," usually after six to nine months of treatment, a stage to be appreciated by the



GROUP OF TUBERCULOUS CHILDREN.

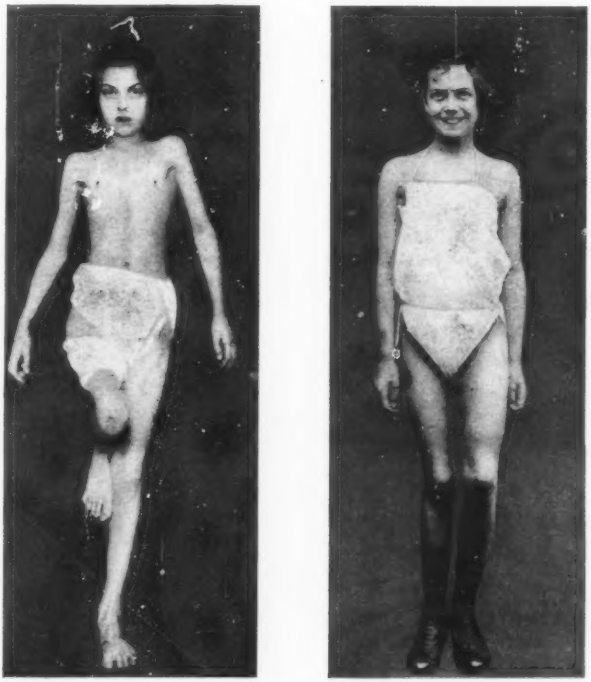
This is a little collection of children living the open-air life, and undergoing heliotheraphy at the County Branch of the Royal National Orthopædic Hospital.

loss of all symptoms and signs of disease except spasm on rotation of the hip, the patient is placed in a double plaster of Paris spica (immobilizing both hips), and then commences to walk. The patient learns to bear more and more weight on the affected limb, and at the same time movement of the joint is prevented. The joint receives a freer blood supply, the bony focus scleroses and a tight, painless, fibrous ankylosis results. In early cases, without bone destruction, a free and painless range of movement can be secured. The patient continues in a series of these spicas until all spasm has been abolished for three months, until the X-rays show sclerosis, and until he can walk and run

without any supporting apparatus whatsoever. When he is discharged, he goes home practically a normal child, without crutches or even a caliper, able to walk, run and play games, subject to the stiffness of one joint.

Abscess formation is not more common in these cases than in cases treated by extension and walking instruments, and an abscess is no

On Admission. *On Discharge.*



TUBERCULOSIS OF THE HIP.

The illustrations indicate a child before and after treatment at the County Branch of the Royal National Orthopædic Hospital.

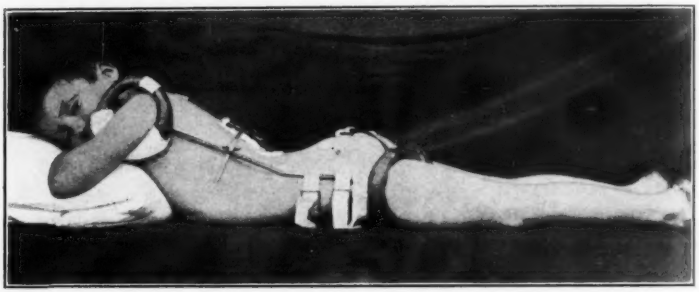
contra-indication to locomotion—pus is better outside the body than inside. As to relapse, we have not yet had to readmit a patient treated by this means. The mortality (from miliary T.B. and meningitis) in a small series of cases, admittedly, is less than the average.

Rarely a case of localized juxta-epiphyseal disease is seen before it bursts into the joint. This patient can be completely cured in a matter of a few weeks if only operation can be undertaken in time. The pus

(which is under considerable pressure) and any dead bone is removed by driving a tunnel through the great trochanter and along the femoral neck, without encroaching upon the joint cavity.

Extra-articular foci can be treated by operation with 100 per cent. success, and in a very short while the patient can be returned to his family a normal child. It is in these cases that operative treatment is imperative in the acute stage, and even before general treatment by heliotherapy and so on is undertaken.

It is universally admitted that a bony ankylosis gives the best functional end result in T.B. hips with bone destruction. A firm fibrous ankylosis gives good potentialities, while a weak ankylosis is followed by abscess, deformity, or relapse in the majority of cases. Consequently, extra-articular arthrodesis by means of a bone graft can



ORTHOPÆDIC FIXATION FRAME IN POSITION ON PATIENT.

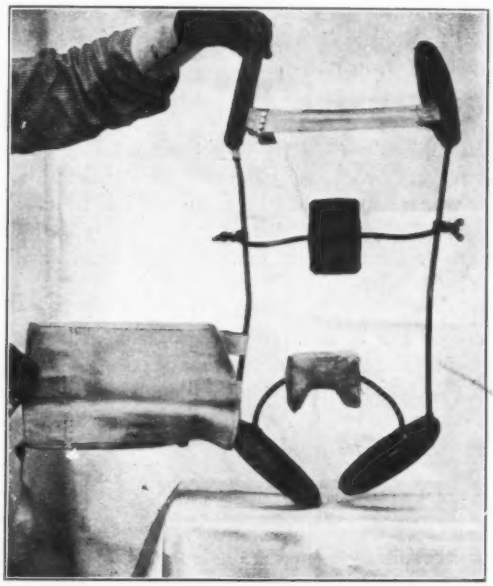
The author's frame for the treatment of spinal caries applied to a child lying in the prone position.

be used in selected cases with the most gratifying results. Extra-articular arthrodesis, too, is most valuable in the treatment of those children who "hang fire," so to speak, improve up to a point but no further—children with a slightly tender, not painful hip, with a tendency for the disease to spread locally by infiltration and bone atrophy.

Many patients are admitted here in the late stage of coxalgia, with the classical deformities. In most cases these can be corrected by osteotomy followed by a long period of locomotion in a double plaster of Paris spica. Where there is a great difference in the length of the limbs, it may be justifiable to shorten the sound femur. The gratitude of a pretty girl who has been enabled to abandon a clumsy high surgical boot in favour of a slightly raised ordinary shoe is considerable.

Tuberculous Spinal Caries.—Patients suffering from spinal caries are usually nursed supine, a most surprising state of affairs. The prone

position is obviously better for the patient, and very much more comfortable for him. Surely it is better to remove the weight of the viscera from the diseased area, to avoid the muscle wasting which follows rest supine, and to limit collapse by hyper-extending the spine to any desired degree? Nursed on their faces, our patients can feed themselves, read without eye-strain, and use their arms without stress or strain to the vertebral column. In addition, they are much more happy than a patient flat on his back, suffering an inferiority complex.



ORTHOPÆDIC FIXATION FRAME.

The author's spinal frame, permitting free use of arms and legs, avoiding muscle atrophy, and rendering nursing, bathing, and heliotherapy easy.

Adults can be safely left prone without retaining apparatus, but children are more difficult. I have designed the frame illustrated here, a frame which is cheap, cleanly, and practically fool-proof. Hyper-extension is controlled by bending the side bars, and undue movement is prevented by the pad over the kyphus and the other pad over the sacrum. Nursing is easy. Apart from the treatment of complications such as compression, operation for spinal caries should be limited, I think, to late and selected cases.

The massive grafts and fusions of Albee and Hibbs have not had

the results anticipated in tuberculous cases, and wide fixation is best done in adults only, and for large angular curves where collapse is complete. On the other hand, where collapse is limited practically to two vertebræ, their fusion by graft is well worth doing to prevent any tearing of scar tissue due to a fall or sudden strain.

Tuberculous Knee.—Good functional results are so rare in tuberculosis of the knee, that when one sees a case of perfect recovery, one is inclined to doubt the correctness of the diagnosis. A freely movable knee is no satisfaction to the patient if he cannot bear all his weight upon it without the aid of instruments, and when bone has been involved in the disease, stability is usually poor. The alternative to the caliper or other walking instrument (short of amputation) is stabilization. It is a melancholy fact that adults walk better with an artificial limb than with a walking instrument, and before condemning a patient to the latter, one should at least offer him the choice of excision. I am accustomed to graft the excised joint with bone at the time of operation, a proceeding which seems to induce more rapid and more certain bony union, and which is devoid of danger. It is really extraordinary how well these patients learn to walk, and the risk of recurrence is, of course, reduced to a minimum.

In children, standard stabilizing operations have to be postponed until adolescence, but in children of seven or over, we are attempting a form of excision and grafting with a loss of only a quarter-inch to half-inch length of limb. The results are promising so far.

It is not rare to see chronic tuberculous disease of the knee with a fixed flexion of 45° or more. It is true that such limbs can be straightened by prolonged extension, but a posterior capsulotomy gives better results, in extremely less time, with less risk to the patient. It is best followed by a stabilizing operation.

In these short notes upon tuberculous coxalgia, spinal caries, and disease of the knee joint, I have tried to indicate the widening field of modern orthopædic surgery, and the brighter outlook for the patient treated in a special hospital such as this. Equally good results are claimed for purely conservative treatment, especially abroad, but I would like to stress the much shorter period of treatment with us, and the proved fact that our patients are functionally good, not only in hospital, but in their own homes.

THE CANADIAN TUBERCULOSIS ASSOCIATION.[1]

By ROBERT E. WODEHOUSE,
M.D., D.P.H.
Executive Secretary of the Canadian Tuberculosis Association.

It is a privilege to respond to the request of the Editor of The British Journal of Tuberculosis to contribute an article dealing with the aims and work of the Canadian Tuberculosis Association, and describing the chief features of anti-tuberculosis efforts in Canada.

In searching for reliable and up-to-date information, it dawned upon me that it might be advisable to reprint the essential portions of the material which was assembled a few months ago at the request of the Federal Government of Canada, and covering the same situation. This statement was desired for use at a conference of national voluntary health organizations which took place in Ottawa, under the chairmanship of the Deputy Minister of Health.

The Canadian Association for the Prevention of Tuberculosis was formed in 1900 at a meeting assembled at the request of Lord Minto, the Governor-General, as a result of a letter received from His Majesty King Edward VII.

Through the progress of time the Canadian Tuberculosis Association has become the affiliating body for all official and voluntary tuberculosis activities in Canada.[2]

The Work accomplished by the Association.

1. *Provision of Sanatoria.*— Before the War the Association stimulated the erection of twenty-five sanatoria for the treatment of tuberculous

[1] In view of the forthcoming visit to Canada of British medical advisers engaged in tuberculosis services in this country, August 8 to September 5, under the auspices of the Canadian Tuberculosis Association and the Sun Life Assurance Company of Canada, and organized at this end by the Joint Tuberculosis Council, of which the Hon. Secretary is Dr. Ernest Ward, Torquay Road, Paignton, Devon, it has seemed desirable to provide an authoritative statement regarding the aims and work of the Canadian Tuberculosis Association. This Dr. Robert E. Wodehouse has kindly provided.—Editor *B.J.T.*

[2] The Canadian Tuberculosis Association has its headquarters at Plaza Building, situated at the corner of Rideau and Sussex Streets, Ottawa, Canada. The Hon. President is His Excellency the Governor General, the Hon. Vice-Presidents are the Lieutenant-Governors of all the Provinces, the President is Dr. D. A. Stewart of Ninetta, Manitoba, the Hon. Treasurer is the Right Hon. Sir Robert Borden of Ottawa, and the Executive Secretary is Dr. Robert E. Wodehouse.

subjects, providing for 1,840 beds. During the War, through its energetic interest, the Government was induced to erect beds necessary for soldiers as additions to existing sanatoria. This increased the accommodation to 3,860. Today, with beds projected, Canada has in sight 8,000 beds in the nine provinces. This figure includes 1,325 new beds under construction today and 390 new beds which have been occupied this year.

2. *The Appointment of Chest Diagnosticians.*—After the War, when ex-soldier tuberculous cases were decreasing, beds threatened to be vacant. Our Association then obtained funds from the Red Cross to assist Provincial Governments and sanatoria to provide travelling diagnosticians for chest cases, who should be at the service of practising physicians in their respective municipalities. There are now twenty such travelling expert diagnosticians operating in Canada. This consultative or advisory service is available in every province.

3. *Tuberculosis Surveys.*—Funds were also obtained from the Canadian Red Cross to aid in the examination of children of school age in each province, so that it might be possible to ascertain the incidence of tuberculosis in apparently healthy children. A survey was made in each of our seven provinces.

4. *The Examination of Indian Cases.*—A committee of our Association obtained the financial assistance and co-operation of the Federal Department of Indian Affairs in making a two-year study of the incidence, type, and ages affected by tuberculosis among the coast and inland bands of Indians in British Columbia. The report is about to be printed by the department.

5. *Three Rivers' Demonstration.*—The Sun Life Assurance Company of Canada, the Canadian Red Cross Society, and the Federal Government gave half the cost of a five-year demonstration at Three Rivers and Cap-de-la-Madeleine in Quebec, the other half being given by the province; the grand total reached $125,000, in addition to a city grant and sums raised by the sale of Christmas seals. The work is in its sixth year and will continue. The Government has just purchased a site for a sanatorium, offering half the cost of providing 100 beds; this has been erected this year for a little in excess of $2,000 a bed, and totalling 150 beds.

6. *Tuberculosis Research.*—We maintain two annual research awards for tuberculosis workers, one for those engaged in clinical services and the other for laboratory work, both confined to sanatoria staff members. The Canadian Red Cross gave us one for two years, and Colonel Leonard has given us three; Sir George Burn together with the interest on the The McSloy bequest has provided means for the other awards. The Associate Committee on Tuberculosis of the National Research Council advises on the disposal of an annual budget of round

about $75,000 to be expended on research, and this committee includes at least five members of our executive committee. Two enterprises are carried on in each of two sanatoria.

7 *Maritimes.*—A three-year educational effort, organized under the Maritime Tuberculosis Educational Committee, financed by the Health Committee of the Canadian Life Insurance Officers' Association, is now in its third year, with one or two more years to run; it has a budget of between $17,000 and $20,000 a year. This has resulted in a $12,000 a year grant to the Nova Scotia Tuberculosis Commission from its Government, providing for the employment of a medical commissioner, a chest diagnostician, and three travelling nurses. Prince Edward Island now has a full-time provincial medical officer of health and diagnostician, and New Brunswick has increased the Government grant per diem to $1.00 for the treatment of tuberculosis. There have also been provided four new public health nurses, increased beds at the Jordan Memorial Sanatorium and the St. John County Hospital, and the Government has approved plans for a new sanatorium for the northern part of the province. In addition, we have a liaison nurse at our Moncton office.

8. *The Christmas Seal Sales.*—This work has been carried on by the assistance of this office since before the War, each committee being assisted in printing individual seals for its sale. In 1927 we decided to reproduce the seal used in the United States for use by all Canadian committees. The Canadian committees retain all but the cost of service for their special local activities. The first year we printed 30,000,000, some French as well as English, and the committees collected $87,000, 10 per cent. of the gross takings being forwarded to our association to cover costs. Our office had a deficit of over $800 on the year's seal sale activities. In 1928 we printed 44,000,000 seals, and over $135,000 was in the hands of local committees from coast to coast on March 1, with receipts still coming in, and the total may reach $145,000. This year we have had to print 70,000,000 seals, and the intake is expected to reach a quarter of a million dollars.

9. *European Tour.*—The Sun Life Assurance Company of Canada awarded us thirty scholarships of $500 each to take Canadian salaried medical tuberculosis workers to England, Wales, France, Italy, Switzerland, and Scotland in 1928. Another European tour is being arranged for public health officers in 1932

10. *Quebec Diagnosticians*—We hope that through the generosity of the Sun Life Assurance Company of Canada we may be able to arrange for the establishment of two or three travelling chest diagnosticians, who shall act as consultants periodically to the several dispensary centres in the province of Quebec and the county health units.

11. *Two New Montreal Projects.*—Two other projects are being

planned. One a course of six lectures, carried on as we hope under the auspices of the Royal Edward Institute, Montreal, and the other a two-year study of industrial employees, including 500 cotton textile workers, 500 stone workers, 500 cigar makers, and 500 clerks. This work, it is proposed, shall be carried on under the Industrial Hygiene Service of McGill University.

12. *Educational Tours.*—The Canadian Medical Association co-operates with our Association in staging tours across Canada, each year, of European tuberculosis authorities, who are enabled to address local medical associations.

13. *Educational Literature.*—This activity varies as we are fortunate enough to strike popular productions. Recently we have distributed free to every school in Canada, French and English, complete sets of nine posterettes and a new series of four posterettes. Also, health lesson letters on ventilation and spitting and other subjects have been distributed. This represents some 30,000,000 items of educational value distributed during eighteen months. Each year since 1900 a larger amount of educational literature has been sent out to all parts of Canada, printed in both French and English.

14. *Co-operation.*—The Association co-operates with any department of the Federal and Provincial Governments or with other official or voluntary groups in financing any health activity beneficial to the anti-tuberculosis work of Canada.

15. *Transactions.*—Each year since 1901 the Canadian Tuberculosis Association has published its Transactions, together with individual summaries of the activities of all official voluntary tuberculosis organizations in Canada; from 1,000 to 10,000 copies have been distributed annually. These annual volumes form a complete record of Canada's fight against tuberculosis. Since 1922 the Association has issued a Fiscal Review within two weeks of the close of each fiscal year for the information of Members of Parliament and members of the Association. In addition to this, beginning September, 1922, an eight-page bulletin has been published in English and French with a total issue of 37,000 per quarter; these are principally mailed through the Distribution Branch of the Federal Printing Bureau.

The table on p. 133, published in the March, 1929, Fiscal Review, covering the calendar year ending at that time, conveys an impression of the financial end of the programme with which this Association is engaged.

We trust the above very condensed statement regarding the activities of our Canadian Tuberculosis Association will be of interest and service to our colleagues and friends in Great Britain, and especially to those tuberculosis officers and others engaged in tuberculosis work whom we hope to welcome in Canada during the coming summer.

TUBERCULOSIS EXPENDITURE IN CANADA DURING 1929 FOR OTHER THAN SANATORIUM CONSTRUCTION OR MAINTENANCE.

Original Donors.		*Other Donors.*	*Combined Donors.*
From Whom.	*Amount Received.*	*Additional Amount Spent.*	*Total Expenditure under our Patronage.*
	$	$	$
Sun Life Assurance Company	15,000	30,000	45,000
Canadian Life Insurance Companies ...	20,000	27,000	47,000
Prince Edward Island	1,200	—	1,200
Colonel Leonard	300	—	300
Sir George Burn	50	—	50
Memberships	200	—	200
Federal Government	25,000	—	25,000
Christmas Seal Sales	14,200	127,800	142,000
Interest McSloy Bequest	110	—	110
National Research Council	—	75,000	75,000
Three Rivers Trust $20,500	8,000	20,000	28,000
Grand totals	84,260	279,800	363,860

CRITICAL SURVEY

DRUG TREATMENT IN PULMONARY TUBERCULOSIS.

By L. S. T. BURRELL,

M.D., F.R.C.P.,

Physician to the Royal Free Hospital and Brompton Hospital for Consumption and Diseases of the Chest.

In the treatment of certain complications and symptoms of pulmonary tuberculosis drugs have a definite value which is well recognised. Their effect on the disease itself, however, is by no means so clear, and a drug which acts in tuberculosis as certain arsenical preparations act in syphilis has yet to be found.

The Action of Heavy Metals and Sanocrysin.

Copper salts have been used in the treatment of pulmonary tuberculosis and improvement has undoubtedly followed in some cases, but the danger of a severe reaction is so great that the treatment has fallen into disuse.

For many years it has been known that preparations of *gold* have a definite action in tuberculosis, and as long ago as 1890 Koch found that gold cyanide in a dilution of 1 in 1,000,000 prevented the growth of tubercle bacilli in culture. As with copper, however, the preparations were found to be toxic and to produce violent or even fatal reactions. Recently Moellgaard has prepared a double thiosulphate of gold and sodium which he calls *sanocrysin*, and which has a definite effect on the course of a tuberculous infection without producing any violent reactions provided the dosage is properly arranged. It has been found that although a weak solution of sanocrysin will inhibit the growth of tubercle bacilli in culture, the addition of serum affects its action, so that even a dilution of 1 in 250 has no effect on the bacilli in blood. Clinically, however, it is found that under sanocrysin treatment not only do tubercle bacilli disappear from the sputum, but the sputum becomes reduced in quantity and may disappear altogether.

Heaf[1] found initial improvement in the clinical condition and in the sedimentation rate of patients under treatment with sanocrysin, but in over 75 per cent. of the cases a relapse occurred. In a later article[2] he discusses the results of treatment in a series of ninety-seven cases, including ten children. Trail and Stone[3] found a similar improvement in the

sedimentation rate in patients treated by sanocrysin. The reader is referred to an article by Shaw[4] and for a detailed account of the uses and dangers of sanocrysin one by Clarke.[5] All these authors found that the most striking result of the treatment is the diminution of the quantity of sputum and in the number of tubercle bacilli found in it.

In my experience very small doses of sanocrysin are quite useless.[6] I begin by giving intravenously an initial dose of 0·1 gramme. This is given to test the patient for idiosyncrasy, as there are a few people who are extremely sensitive and cannot tolerate sanocrysin. If there is no reaction 0·25 gramme is given and then at weekly intervals 0·5, 0·75 and 1 gramme. This last dose is repeated at weekly intervals three times, so that the total sanocrysin given during the course is 5·6 grammes. With this dosage a serious reaction is avoided provided: (1) That the dose is not increased if the previous one caused a reaction. In some cases reaction follows 0·5 or even 0·25 gramme and it is impossible to get beyond such a dose. In these cases the doses are repeated (0·5 or 0·25) at weekly intervals and are not increased. Except in children or very small people it is rare in my experience to get a good result unless a dose of 0·5 or over can be taken. (2) An interval of at least a week is left between each dose. (3) No single dose of over 1 gramme is given. (4) Not more than 6 grammes are given at any course, although after an interval of two or three months a second course may safely be started.

The chief indications for sanocrysin treatment are: (1) to diminish the quantity of sputum and number of tubercle bacilli; (2) to check an acute spread of disease; (3) to treat bilateral disease in combination with artificial pneumothorax.

There are now on the market other preparations of gold which are said to act equally well and to be less toxic. An account of the results of treatment with solganal is given by Saegler,[7] and another gold preparation known as *triphal* is described by Melion.[8] In Switzerland *allocrysin* is being used, and not only is it claimed to be non-toxic but it can be given intramuscularly, which is a distinct advantage.

The Use of Calcium Preparations.

Good results have been described following the administration of calcium. It is not surprising that it should have been advocated, not only because there is a calcium deficiency in the blood of phthisical patients, but also because workers in lime are known to be particularly free from the disease. Moreover, calcification plays an important part in the healing of tuberculous lesions. Prest[9] treated a series of cases by weekly injections of 0·5 c.cm. of collosol calcium with promising results. Maendl[10] describes the results of treating 250 cases with

intravenous injections of calcium and he found improvement in many patients, but no definite conclusions can be formed.

Half the calcium chloride injected intravenously is excreted in the urine within three hours, and the remainder is excreted within the first three days, so that a calcium deficiency cannot be overcome by periodic injections of calcium chloride. It is possible, however, to tide over a temporary deficiency, and good results have followed injections of calcium in hæmoptysis. Elving[11] found that the coagulation rate of the blood increased from five and a half minutes to half a minute in a case after the intravenous injection of 20 c.cm. of a 15 per cent. solution of calcium chloride. In cases, therefore, where there is continuous bleeding in small amounts, calcium may promote clotting and cause the hæmorrhage to stop. In the case of frank hæmoptysis when a large vessel is bleeding, treatment by calcium is of course quite useless.

Apart from hæmoptysis, enteritis, or other complications calcium does seem to be of value in some cases of pulmonary tuberculosis. It should be given over a long period of time, however, and since repeated intravenous injections are apt to be troublesome for the patient, it is better to give the calcium by the mouth or by intramuscular injection. Kalzana tablets may be given by the mouth or 10 c.cm. of Sandoz calcium injected intramuscularly twice or three times a week. Under this treatment I have seen symptoms of activity disappear in a few patients who were failing to improve under other treatment, but in some it has no effect whatever.

The parathyroids assist calcium metabolism, and the effect of calcium treatment is greater if combined with parathyroid, gramme $\frac{1}{10}$ three times a day. Cod-liver oil or some preparation rich in vitamin D may with advantage be combined with calcium treatment. For a very full and interesting account of calcium metabolism and parathyroid function the reader is referred to the work of Ellman.[12]

The Administration of Iodine.

In whatever form iodine is given it forms an iodide in the blood, so the various preparations advocated probably have no advantage over potassium iodide. The so-called "nascent iodine" treatment was once in vogue, but has now largely fallen into disuse; 30 grains of potassium iodide were given in a tumbler of water at 7 a.m., and at 11, 1, and 3 o'clock an ounce of chlorine water in half a pint of lemonade. I have seen no benefit from this treatment, and the chlorine water is very unpleasant to take. Iodine or potassium iodide given over long periods appears to have been of benefit in certain cases, however, especially if there is bronchitis associated with the tuberculosis.

The Employment of other Drugs.

Sodium Cacodylate.—This is an old remedy, which has been used to reduce the temperature and for its tonic effect in cases of phthisis. One grain is injected intramuscularly daily for a fortnight, and the course is repeated after an interval. It is doubtful, however, if it is of any value apart from its tonic effect. Liq. arsenicalis is probably of equal value as a tonic, but the arsenical preparations have no apparent effect on the tuberculous lesions.

Antimony has often been used, and Dr. Moxey[13] describes the results of treatment on 350 patients over a period of two months or more.

Creosote is a drug which has been used extensively both by inhalation and oral administration in cases of phthisis, but has proved of no definite value. If taken by the mouth it is best given in capsules, and large doses may be taken in this way. Small doses may relieve nausea and flatulence, but large ones are apt to cause gastro-intestinal symptoms. Being partly excreted by the lung, it can be detected in the breath, and for this reason it is much used in such cases as fœtid bronchitis, abscess of lung, or bronchiectasis. Apart from its deodorant effect, it can only be regarded as harmful in large doses and useless in small ones.

The Rôle of Vitamins.

Whatever disagreement there may be as to the various predisposing causes of tuberculosis, it is not seriously disputed that one, and a very important one, is lack of the right kind of food. This fact was well illustrated in the Great War. Vaile[14] reported cases showing that people who do not eat fat are more liable to become tuberculous than others. Many who will eat butter or bacon fat refuse beef and especially mutton fats, and appear to be just as liable to contract tuberculosis as those who do not take fat at all. It is probable that some fats have more protective properties than others. Mutton suet dissolved in milk, warmed and filtered through muslin, used to be a popular remedy for phthisis.

Insurance office statistics show that there is less tuberculosis in those over weight for age and height than in those who are under weight. It must not be assumed that an active tuberculous lesion can be cured by fat or other diet, but the facts do suggest that the growth of the bacilli is impeded if the body is nourished by certain substances.

Cod-liver oil is rich in vitamin A and D, and has long been used in the treatment of phthisis. It is usually combined with a generous diet of fresh food and an open-air life. Recent knowledge of vitamins

and the effect of ultra-violet light suggest an explanation of the value of this treatment.

It is important to avoid causing indigestion by over-feeding, nor is it necessary to give excess even of the right food, for it is very rare to find a patient suffering from complete vitamin deficiency. It is usually a case of chronic insufficiency of vitamin, and it would appear that at certain ages, especially about the time of puberty, there is a greater need for vitamins than at others, hence deficiency diseases are more liable to occur at some ages than at others.

Drug treatment may therefore be found useful in pulmonary tuberculosis, but it should never be regarded as anything more than accessory treatment. If it is allowed to supplant rest and routine treatment the result will usually be disastrous.

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ASSOCIATIONS AND INSTITUTIONS.

THE NATIONAL TUBERCULOSIS ASSOCIATION OF THE UNITED STATES.

We have received the following concise statement regarding the aims and work of the American National Tuberculosis Association from Dr. Kendall Emerson, the Managing Director:

The National Tuberculosis Association, the headquarters of which are at 370, Seventh Avenue, New York City, is a voluntary organization of physicians, laymen, and representatives of associations formed in 1904 for the purpose of developing ways and means for the study, control, treatment, and prevention of tuberculosis. The definite purposes of the Association, as stated in its by-laws, are as follows: The study of tuberculosis in all its forms and relations; the dissemination of knowledge concerning the causes, treatment, and prevention of tuberculosis; the encouragement of the prevention and scientific treatment of tuberculosis; the stimulation, unification, and standardization of the work of the various anti-tuberculosis agencies throughout the country, especially the State and local associations; the co-operation with all other health organizations in the co-ordination of health activities; and the promotion of international relations in connection with health activities in the study and control of tuberculosis. The most important features of the programme of the national, state, and local tuberculosis associations since the beginning of the movement in the United States in 1904 have been the encouragement of those measures which have brought about: (1) The adoption of various procedures by health departments for the notification and supervision of persons afflicted with tuberculosis; (2) the construction and maintenance by cities, counties, and states, of institutions for the care and treatment of tuberculosis patients of all types; (3) the establishment and maintenance of institutions for the prevention of tuberculosis, such as preventoria, open-air schools and camps; (4) the instruction of the public, men, women, and children, in the methods of avoiding and curing tuberculosis; and finally, (5) the intensive scientific study and methods to be used in the prevention and treatment of tuberculosis. The results of this programme, forwarded since 1904 by the National Tuberculosis Association, may be seen first in the growth of its affiliated organizations and agencies. When the National Tuberculosis Association was founded in 1904, there were in the United States only twenty tuberculosis associations. Of these not more than eight had sufficient funds with which to carry on any kind of service. Today there are local associations in each of the larger cities and counties, numbering 1,454, and there are in addition 282 local committees which do not qualify as local associations. In 1904 the 100 tuberculosis hospitals then in existence were for the most part private and commercial institutions, and all told provided only 10,000 beds. In 1928 there

were 618 hospitals and sanatoria with a combined bed capacity of 73,695. The number of open-air schools has grown from the first one in 1908 to approximately 1,000 in 1928, and the number of preventoria from one in 1909 to 83 in 1928. Clinics and dispensaries have shown a remarkable growth in two ways: first, in a numerical growth from 19 in 1904 to 3,671 in 1928; and, second, in kind and method. Today even the remotest hamlets of the West and South have tuberculosis clinic service through the recently developed ambulant, travelling, or occasional clinic. Similarly the public health nursing movement, started in the early days of the Association as a tuberculosis agency, has grown to large proportions. Of the more than 11,000 public health nurses at work in the United States at the present time, more than half are devoting all or most of their attention to tuberculosis work, and a large part of the remainder are rendering some form of tuberculosis service. Equally striking have been the gains in life-saving during the same period. In 1904 the death rate from tuberculosis was 200 in every 100,000 population. In 1928 (the latest available figures) the death rate had declined to 79·2 per 100,000 population. It is believed that this remarkable decline in the death rate has been due primarily to the anti-tuberculosis campaign, but no one can estimate the proportionate amount due to measures taken to prevent infection, and to those other measures recommended and adopted to improve the general health of the individual and the general public. There is every reason to believe, also, from recent studies, that the amount of tuberculosis infection is decreasing. There is, furthermore, an abundance of evidence to show that the general health and resistance of the public at large has been much improved.

BLACK NOTLEY COUNTY SANATORIUM, ESSEX.

Dr. M. C. Wilkinson, Medical Superintendent of the new County Sanatorium for Essex at Black Notley, has kindly favoured us with the following description:

The Right Hon. Arthur Greenwood, Minister of Health, on April 26 opened the new Sanatorium of the Essex County Council at Black Notley. At this Sanatorium 174 beds are provided for the treatment of women and children suffering from pulmonary and non-pulmonary tuberculosis. In addition, there are ten beds for non-tuberculous orthopædic cases. The pulmonary pavilions occupy with the administration block the southern area of the site, the non-pulmonary pavilions with the theatre block the northern. Intermediately are placed the power-house, the laundry, the school, and the isolation block. There are also garages, mortuary, stores, medical superintendent's house, and a large recreation hall. The administration block is a large, two-storied building with a central courtyard. The ground floor contains offices, laboratory, dining- and sitting-rooms, and a large kitchen. The upper story contains accommodation for the staff. The theatre block contains an excellent operating theatre, anæsthetic room, and sterilizing rooms; here also are the X-ray department, a room for

artificial pneumothorax treatment, the plaster room, and the light department. Each pulmonary pavilion contains six four-bed cubicles, a single cubicle, a duty-room, store-room, drying-room, bathrooms, and lavatories. The south walls of the cubicles open on to a roofed veranda, to which is adjoined a day-room. The non-pulmonary pavilions lead into the theatre block, and contain two wards each and two cubicles. Their accessory accommodation is similar to the pulmonary pavilions, except that the veranda is not roofed but has blinds which can be drawn. The architecture of the sanatorium is pleasing, and affords to a maximum degree both efficient means of treatment and comfort for the patients.

The Asthma Research Council, the President of which is the Marquess of Dufferin and Ava, and Dr. Arthur F. Hurst, Chairman of the Honorary Medical Advisory Committee, have just issued from their headquarters at King's College, University of London, Strand, W.C. 2, a 44-page report containing a Programme of Research and particulars regarding the first year's work at the Asthma Research Clinics at Guy's Hospita land the Hospital for Sick Children in Great Ormond Street, London, together with reports on the Special Asthma Clinics at Glasgow, Leeds, Birmingham, Edinburgh, and Continental centres. There is also a serviceable bibliography.

NOTICES OF BOOKS.

THORACIC PUNCTURE FLUIDS.

Dr. S. R. Gloyne has provided a serviceable guide to the clinical pathology of puncture fluids obtained from the thorax.[1] With the development of new diagnostic procedures and the increasing demands for surgical measures in dealingwith intra-thoracic disease there is the need for thorough investigation of puncture fluids where such are available. The interpretation of findings is usually by no means easy and generally calls for consultation between pathologist and clinician. Dr. Gloyne's careful compilation of all known facts of importance in regard to thoracic puncture fluids, amplified by his own extensive personal experience, provides a work of the greatest value and one which should be in the hands of all physicians and surgeons dealing with patients the subjects of intra-thoracic disease. The volume consists of fourteen chapters, including expositions regarding the anatomy, physiology, and pathology of the exploratory puncture; physical, chemical, cytological, and bacteriological examinations and serological tests. There are special chapters on the Investigation of Serous Fluids, Effusions, Complicating Pneumothorax, Hæmorrhagic Pleural Effusions and Hæmothorax, the investigation of emphyma cases and rare types of thoracic puncture fluids. The last essay deals with Autoserotherapy. At the end of each chapter there is a useful bibliography, and there are excellent indexes. Dr. Gloyne in dealing with aspects of his subject relating to tuberculosis points out that "when tubercle bacilli and the products of inflammation are absorbed from the visceral pleura, they do not pass directly through the lung by the shortest route from pleura to hilum, but by a circuitous route around the periphery of lung to the root. Absorption from the parietal pleura, on the other hand, takes place . . . mainly with the lymph trunks at the junction of the internal jugular and subclavian veins without passing through the hilum glands." Dr. Gloyne, in drawing attention to the opinion that a serous pleural effusion containing cholesterol crystals is indicative of the tuberculous nature of the exudate, says "there are doubtless other unexplained reasons for its occurrence, for only a small percentage of retained effusions in tuberculosis exhibit this characteristic appearance." The coloured frontispiece and the series of eight instructive illustrations add to the value of this notable monograph.

HYGIENIC SCHOOL BUILDINGS.

Sir Felix Clay's standard work on school building, now in its third edition, is one which provides data and all necessary guidance for local

[1] "The Clinical Pathology of Thoracic Puncture Fluids." By S. Roodhouse Gloyne, M.D., D.P.H., Pathologist, City of London Hospital for Diseases of the Heart and Lungs, Victoria Park. Pp. vii+83, with frontispiece in colours and 8 figs. London: John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, W. 1. 1930. Price 10s. 6d.

and central government authorities, educationists, architects, builders, medical advisers, and others interested in and responsible for the establishment of modern schools for all classes of children and adolescents.[1] School planning not only for the sound but for the delicate has made great advances during recent years, due in great measure to the influence of modern views on the importance of air and light and proper ventilation in the hygienic management of developing boys and girls. Sir Felix Clay's handsome volume, lavishly illustrated and beautifully printed, is an ideal guide to school construction. It deals with all types of buildings for both elementary and secondary education. There are admirable chapters on Cost of Schools; Sites, Aspect, and Ventilation; Heating and Lighting; Sanitary Arrangements; Organization and Accommodation; Planning and Arrangement; Accommodation; and Details of Rooms. There are also sections dealing with Open Air Schools for Defective and Delicate Children; Clinics; Gymnasia and Boarding Schools. We would direct special attention to the chapter on Open-Air Schools and Nursery Schools, which is effectively illustrated and furnishes plans and particulars regarding a number of these educational centres. It is to be hoped that the new schools which will be required in the immediate future will be constructed in accordance with the scientific principles and hygienic requirements so admirably set forth in this monumental volume.

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

"The Modern Treatment Series" of handbooks, edited by F. G. Crookshank, M.D., F.R.C.P., has been planned to provide busy practitioners and others with a compact, reliable, inexpensive, up-to-date practical library of guides to certain of the special branches of medicine and surgery.[2] In this timely and serviceable collection are several volumes likely to be of particular interest to readers of this JOURNAL. "The Surgical Treatment of Pulmonary Tuberculosis," by Bernard Hudson, M.D., M.R.C.P., Medical Superintendent Victoria Sanatorium, Davos Platz, Switzerland, furnishes an outline of the general principles and practices of the modern surgical treatment of pulmonary tuberculosis in a form which the general practitioner will appreciate and find of service. The work will also be of interest to tuberculosis officers and others dealing with tuberculous cases. The first section is devoted to a history, survey and description of artificial pneumothorax, with chapters on operative technique, effects, complications, indications and contraindications, remote effects, and the like. In section two other methods of surgical treatment are considered, and include accounts of

[1] "Modern School Buildings—Elementary and Secondary: A Handbook on the Planning, Arrangement, and Fitting of Day and Boarding Schools, having Special Regard to the Question of Cost, Hygiene, and Educational Requirements." By Sir Felix Clay, Bart., B.A., F.R.I.B.A., late Architect to the Board of Education. Third edition, entirely rewritten. Pp. 208, with 169 illustrations from plans, elevations, perspectives, photographs, details, etc., of recent schools, including 7 double-page plates. London: B. T. Batsford, Ltd., 94, High Holborn. 1929. Price 25s.

[2] The Modern Treatment Series, edited by F. G. Crookshank, M.D., F.R.C.P., are published by Jonathan Cape, Ltd., 30, Bedford Square, W.C. 1. Price 5s. each volume.

thoracoplasty, phrenecectomy, plombage, and cavity drainage. The author is a physician of long experience, and his presentation of surgical procedures is specially valuable in affording guidance in the formation of correct and helpful opinions regarding the relative value of the various surgical measures now being advocated and the selection and management of suitable cases. Dr. Hudson concludes his valuable little work with these words : " When medical men and the general public become more accustomed to the idea of operative therapy for pulmonary tuberculosis, and when greater experience has been accumulated, so will the knowledge of the indications for this therapy become more concise and certain, making it possible to operate more often at the most suitable moment and on a larger number of patients. There is every prospect that many more sufferers may be saved, and may be able to resume an active life and regain the social and economic value of their existence."

" Modern Treatment of Diseases of the Throat, Nose, and Ear," by H. Lawson Whale, M.D., F.R.C.S., Surgeon to the Special Department at the Hampstead General Hospital, and at the London Temperance Hospital, has been written with the view of providing the progressive practitioner with such a general perspective as will enable him to advise his patients effectively in regard to such therapeutic measures as are dealt with in this handbook. In a limited space much practical information is presented in a vivacious, critical and serviceable manner. It is divided into four sections, dealing first with methods old and new and then furnishing concise surveys of measures for the relief of diseases of throat, nose and ear. There are useful references to the management of cases with tuberculosis of the larynx, and lupus of nose and throat. Mr. Whale has accomplished a difficult task with conspicuous success, and his compact survey should be read by every class of medical adviser. "The Physiological Principles of Hydrology," by R. G. Gordon, M.D., D.Sc., F.R.C.P.E., and F. G. Thomson, M.A., M.D., F.R.C.P., Physicians of Bath, should be read by all interested in therapeutic measures dependent on the action of waters at Spas in this country and abroad. This is not a mere guide to Spas, but provides a physiological and pharmacological explanation regarding the employment of hydrological methods. The authors give good grounds for their contentions—(1) that hydrotherapy has a right to a place in a scientific therapeutic armamentarium, and that by its means certain results may be obtained which no other methods can so successfully achieve; (2) that the action of water and waters depends rather on their physical than their chemical properties, and that consequently their power for conferring benefit cannot be measured only by their somewhat unconvincing chemical formulæ; and (3) that claims for curing diseases should not depend on the potentialities of a method of treatment in relieving a symptom common in a disease, but only on the ability of the remedy at least to alleviate the true underlying causes of that disease. The book opens with an interesting and historical epitome, and then follow chapters dealing with the physiology of the skin and other systems in relation to hydrology, the internal administration and external application of mineral waters, and the application of hydrology to certain diseases. There is much in this reasonable study of hydrology which will be helpful to tuberculosis officers, as well as serviceable to practitioners generally. Even those engaged in so-called Spa practice will find the work suggestive and interesting.

Dr. A. Moncrieff and his co-workers at the famous Hospital for Sick Children in Great Ormond Street, London, have produced a new work on the care of sick children, which we commend to the consideration of both doctors and nurses responsible for the management of disordered and diseased young subjects.[1] The work is appropriately dedicated to "The Nursing Staff of the Hospital for Sick Children, Great Ormond Street, Past, Present and Future," and is intended primarily for nurses preparing for the final State examination. It conforms to the syllabus issued by the General Nursing Council for England and Wales. The material so admirably presented in this elaborately designed and effectively produced work is extensive and very comprehensive and would seem to be unnecessarily elaborate for the majority of nurses, but for those intending to devote themselves to the care of sick children it will meet all possible requirements. Indeed, the work is so practical and generally helpful that we commend it to the consideration of general practitioners and especially newly-qualified men and women who are responsible for the care of boys and girls in schools, institutions, or in their own homes. Much of the matter presented in this handsome volume is based on the teaching and practice long approved by the staff of the Hospital at Great Ormond Street. The section dealing with tuberculosis has been written by Dr. B. E. Schlesinger, but is short and general: we could have wished that more information had been given regarding the provision of so-called sanatorium treatment and management under open-air conditions. There is an appendix containing recipes and other serviceable information, including notes on breathing exercises after operations for enlarged tonsils and adenoids, supplied by Miss Doris M. F. Boutcher. Questions set at the State examinations for sick nurses are reproduced and indicate how much is now required of nurses in regard to pathology, therapeutics, and other subjects which seem to be beyond the actual applied art of nursing. The index is exceptionally good. All who have co-operated in the production of this elaborate work on the care of sick children are to be congratulated.

Dr. Noel D. Bardswell has issued in book form a Report prepared for the Central Fund for the Individual Welfare of Tuberculous Persons, the headquarters of which are at Denison House, 296, Vauxhall Bridge Road, S.W. 1, dealing with work centres for tuberculous men, with special reference to the enterprise known as the Spero Firewood Factory situated at 74, Paradise Street, Rotherhithe, S.E. 16.[2]

[1] "A Textbook on the Nursing and Diseases of Sick Children for Nurses and Welfare Workers." By various authors, edited by Alan Moncrieff, M.D., B.S., M.R.C.P. (Lond.), Medical Registrar and Pathologist to the Hospital for Sick Children, Great Ormond Street, London. Contributors: T. Twistington Higgins, O.B.E., F.R.C.S., Surgeon to the Hospital for Sick Children, Great Ormond Street; Eric I. Lloyd, M.A., M.B., B.Ch., F.R.C.S., Surgeon to the Hospital for Sick Children, Great Ormond Street; Bernard Schlesinger, M.A., M.B., B.Ch., M.R.C.P., Physician in Charge of the Children's Department, Royal Northern Hospital; with the collaboration of M. A. Fussell, S.R.N., Sister Tutor, the Hospital for Sick Children, Great Ormond Street. Pp. xiv + 580, with 111 Illustrations. London: H. K. Lewis and Co., Ltd., 136, Gower Street and 24, Gower Place, W.C. 1. 1930. Price 15s.

[2] "Work Centres for the Tuberculous: The Experience of the Spero Firewood Factory, London." By Noel Dean Bardswell, M.V.O, Légion d'Honneur, M.D., F.R.C.P., F.R.S E., Consulting Physician, King Edward VII. Sanatorium, etc. Pp. 64, with 2 illustrations. London: John Bale Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, W. 1. 1930. Price 3s. 6d.

The brochure provides an illuminating account of this interesting adventure, together with data regarding financial considerations.

"The T.B. Patient's Guide," by Dr. Frederick J. C. Blackmore, Tuberculosis Officer for the Metropolitan Borough of Woolwich, published by Cassell and Co., Ltd., is a concise, practical manual which should go far to secure effective co-operation between medical adviser and consumptive patient (price 1s. 6d.). In simple, direct, non-technical words the author sets forth essential facts and furnishes serviceable directions which will be invaluable to tuberculous cases and those responsible for their care.

"Smoke and Health," by Dr. J. S. Taylor, Assistant Medical Officer of Health for the City of Manchester, published by the Manchester and District Regional Smoke Abatement Committee and the National Smoke Abatement Society, Civic Buildings, 1, Mount Street, Manchester, is a twelve-page brochure indicating by charts and effectively presented text the prejudicial action of a smoke-laden atmosphere (price 2d.). There are sections on the Psychological Effect of Gloom, the Biological Action of Light and the Value of Irradiation, and the Therapeutics of Ultra-Violet Rays in Pulmonary Tuberculosis and Extra-Pulmonary Tuberculosis.

Drs. Guy and Linklater of the Public Health Centre of Edinburgh have produced an excellent handbook of hygiene for nurses.[1] It has been modelled on the syllabus issued by the General Nursing Council, and is intended to assist nurses, not only in preparing for examinations, but in the conduct of their professional work. Special stress is laid on the importance of the communal aspect of hygiene, particularly in regard to sewage systems, water supplies, and matters touching the health and happiness of the people. The first part contains chapters on Water, Air and Ventilation, House Construction, Heating, Lighting, Sewage Disposal, Communicable Diseases and External Parasites; while in the second part there are chapters on Personal Hygiene, Food and Metabolism, Vegetable and Animal Foods, and Internal Parasites. The concluding chapter deals with the Rôle of the Nurse in her Relations to Public Health. The appendices contain useful data regarding the Scottish Board of Health, Notifiable Diseases, and Foods. There are a few illustrations which might be increased in number with advantage in the next edition.

Sir James K. Fowler's studies in tuberculosis will be well known to readers of this JOURNAL, and they will be specially interested in his latest work.[2] Here are set forth in attractive form the author's mature thoughts regarding various psycho-physiological types met with in the clinical practice of medicine. It deals with the human units in civilized communities who, as regards the various manifestations of the activities of their nervous system, are to be viewed and dealt with as highly sensitized individuals. To these "hypersensitives" Sir James Fowler gives the general title of "The Sthenics." The characteristics of the sthenics are admirably described, and since not infrequently these become the subjects of tuberculosis and associated

[1] "Hygiene for Nurses." By John Guy, M.D., D.P.H., F.R.C.P.E., and G. J. I. Linklater, O.B.E., M.D., D.P.H., M.R.C.P.E. Pp. 212, Edinburgh: E. and S. Livingstone, 16-17, Teviot Place. 1930. Price 5s.

[2] "The Sthenics: the Chord Invisible." By Sir James K. Fowler, K.C.V.O., C.M.G., M.A., M.D. Pp. 81. London: Macmillan and Co., Ltd., St. Martin's Street, W.C. 1. 1930. Price 3s. 6d.

troubles it will be well for readers of this JOURNAL to give special heed to Sir Henry Fowler's contentions as set forth in his original and appealing study.

Sir John Bland-Sutton's former students, colleagues, and many friends will be thankful to him for having provided them with a story of his life in attractive and permanent book form.[1] It is the autobiography of a great personality—one who has proved himself a famous surgeon, a much appreciated teacher, a valued contributor to zoology, pathology, and surgical science, and a man respected by his co-workers and beloved by patients and fellow-workers. The work is the outcome of promptings from Mr. Rudyard Kipling, to whom we are grateful. The narrative centres around the Middlesex Hospital, the author's Alma Mater. Not only does Sir John Bland-Sutton present interesting records in his own career as experienced at the Prosectorium of the Zoological Society, as lecturer and surgeon at the Middlesex Hospital, as President of the Royal College of Surgeons, and in war service and public activities and foreign travel, but he also throws much light on the evolution and progress of pathology and surgery, and the scientific study of medicine and other branches of knowledge, particularly in regard to the development of Lister's great work. The volume is attractively illustrated, and includes a picture of the author's famous Persian Court. Everyone who has been fortunate to know Sir John Bland-Sutton or to have read his books should peruse this life record of a famous man, of whom British surgery may justly be proud.

"Henry Hill Hickman: the English Pioneer in Anæsthesia," was the subject of an address delivered by Lord Dawson of Penn at the Wellcome Historical Medical Museum, 54, Wigmore Street, W., on April 2. Dr. Henry S. Wellcome has now issued an artistic souvenir volume containing communications from Dr. J. D. Comrie and Dr. D. Wilmot Buxton, together with an account of Hickman's life and work.[2] The handsomely-produced volume contains numerous instructive illustrations and reproductions of MSS.

Every medical officer of health and all medical advisers interested in the prevention of tuberculosis should pay attention to all aspects of the problem of housing. A work which will appeal not only to members of the medical profession but to all citizens desirous of providing healthy and happy homes for all members of the community has been written by Mr. Sidney H. Heath.[3] It is divided into six parts, which can be obtained separately for use in schools, dealing respectively with the cottage, the farm, the manor-house, the castle, the church, and the old town. The volume is profusely illustrated with charming black-and-white sketches specially drawn by the author. The work will appeal particularly to those who have antiquarian interests and desire

[1] "The Story of a Surgeon" By Sir John Bland-Sutton, Bt., F.R.C.S., Vice-President and Consulting Surgeon to the Middlesex Hospital. With a Preamble by Rudyard Kipling. Pp. xii + 204, with portrait-frontispiece and 27 other illustrations. London: Methuen and Co., Ltd., 36, Essex Street, W.C. 1930. Price 12s 6d.

[2] "Souvenir of the Henry Hill Hickman Centenary Exhibition, 1830-1930, at the Wellcome Historical Medical Museum, 54, Wigmore Street, W. 1." Director: Henry S. Wellcome, LL.D., F.S.A.; Conservator: L. W. G. Malcolm, M.Sc., F.R.S.E. Pp. 85. London: The Wellcome Foundation, Ltd. 1930.

[3] "The Homes and Buildings of Other Days," written and illustrated by Sidney H. Heath. London: George Philip and Son, Ltd., 32, Fleet Street, E.C. 4. 1929. Price 5s., or in two volumes 2s. 6d. and 3s.; and in six separate volumes, 1s. 6d. each.

to study the evolution of English home architecture. We would commend the volume to all who as health and holiday seekers have opportunities of studying old houses in various parts of England.

Tuberculosis has taken heavy toll from the ranks of those who have contributed to the world's literature. The consumptive has figured in many novels, but there are few works written by tuberculous subjects describing their experience. Recently there has been issued a novel dealing with sanatorium life.[1] It is a vivid portrayal of incidents of institutional residence, and is manifestly written by one who as patient has had actual experience of the comedies and tragedies of a sanatorium. It is a novel which every medical superintendent of a sanatorium should read, and those responsible for the care of cases in residential institutions for consumptive patients may learn much by a judicious perusal of Mr. Stewart's cleverly constructed, interesting, but depressing book. The wrapper of the volume is something of a novelty, being in the form of a temperature chart, indicating the course of a typical consumptive case.

Switzerland still maintains its popularity not only as the playground of Europe, but as a sanatorium to which health seekers from all parts of the world resort in ever-increasing numbers. It has justly won a recognized distinction as a land rich in health stations for consumptives and other tuberculous and tuberculously disposed subjects and for many delicate young people. At this season of the year large numbers of holiday makers from this land find rest and restoration on the bracing uplands and in the peaceful valleys of Switzerland. Before setting out for this nature-blessed little country in the centre of Europe we would advise a perusal of Sir Frank Fox's charming book on Switzerland.[2] It provides in peculiarly attractive form delightful accounts of the history and natural features of this wonderland of mountains, rivers, lakes and flower-clad valleys, its literary associations, and the characteristics of its people. There are also informing chapters on Alpine Climbing, Avalanches and Glaciers, Alpine Clubs, the Flowers of the Alps, Swiss Sports and Swiss Institutions. The numerous illustrations in colour add greatly to the attractiveness of a remarkable work. It can now be obtained at an expenditure which is comparatively small.

Germany is the wonderland to which at this season of the year many are turning for recuperation and restoration of health, or for holiday delights. Before setting out on their journeying we would advise a perusal of Mr. Gerald Bullett's charming book.[3] This affords delightful accounts of personal experiences along the river valleys of the Rhine and the Neckar, in the Black Forest, at Augsburg, Mittenwald, Oberammergau, Munich, Nuremberg, and other Bavarian picturesque places, among the palaces of Berlin, and the sights of Ham-

[1] "Sanatorium: A Novel." By Donald Stewart. Pp. 306. London: Chatto and Windus, 97 and 99, St. Martin's Lane, W.C. 2. 1930. Price 7s. 6d.

[2] "Switzerland." By Sir Frank Fox. Pp. x+197, with 32 illustrations in colour by J. and M. Hardwicke Lewis, A. D. McCormick, and others: and sketch map. London: A. and C. Black, Ltd., Soho Square, W. 1. This work, published at 15s., may be obtained for 7s. 6d. or post free on sending 8s. 3d. to W. H. Smith and Son, Ltd., Strand House, W.C. 2.

[3] "Germany." By Gerald Bullett. With a chapter on German Tourism and Mountaineering by Anthony Bertram. Illustrated by E. T. and E. Harrison Compton. Pp. viii+195, with 32 coloured plates and sketch map. London: A. and C. Black, Ltd., 3, 5 and 6, Soho Square, W. 1. 1930. Price 7s. 6d.

burg and Bremen. A particularly interesting chapter on German Touring and Mountaineering is provided by Anthony Bertram. The volume is provided with a beautiful series of full-page reproductions of water-colour drawings. To possess such a volume is a lasting joy. It is an ideal gift book.

In "The Picture Guides" Series published by the Medici Society, which deserves to be known by all who travel for health and happiness, there is a perfectly charming volume on Switzerland.[1] It is a fascinating collection of reproductions of choice photographs, one or two to a page, many occupying the whole of a page, and furnishing wonderful views of mountains, rivers, lakes, and well-known Swiss beauty spots. Mr. Paul Guiton provides a picturesque text which is informing, appealing, and rich in details of national and domestic Swiss life. All lovers of Switzerland should possess this album of delights. It is an ideal gift book for those who go to or have been in Switzerland.

Mr. John Chancellor's Guide to Berlin is a novelty which should be studied by all Britishers intending to visit Germany's great capital.[2] It is constructed on similar lines to the author's popular Guide to Paris, of which 8,000 copies were rapidly sold. The book is full of directions, suggestions, information, tips, and practical notes, which will be invaluable to all who visit Berlin either as serious students or as transitory sightseers. The section on the German language and the serviceable vocabularies form admirable features. There is also an excellent map of the City of Berlin.

Mr. Reginald Wellbye's handbook on British touring areas should be in the hands of sensible health and holiday seekers, and it will appeal especially to everyone who is an owner-driver of a reliable motor-car and a lover of his country.[3] It compresses much descriptive matter and serviceable information into a small space, dealing with centres in England, Scotland, Ireland and Wales. The numerous illustrations add greatly to the value of this welcome companion for a motoring tour.

Mr. R. Francis Foster in "Joyous Pilgrimage"[4] has given us a companion volume to his charming record of whimsical wanderings—"Secret Places." It is an ideal book for patients and all lovers of an open-air life. In quaint narrative form and in mediæval manner are set forth the strange adventures of the author and "Longshanks" in their vagabond itinerations during a summer journeying among some of the choicest districts of our highly favoured England. This dainty, delightful and choice collection of essays is just such as will appeal to those who love the countryside and are proud to be pilgrims in England's

[1] "Switzerland: Western and Southern—Neuchatel and Geneva to Ticino." By Paul Guiton. Pp. 224, with illustrations and map. London: The Medici Society, 7, Grafton Street, W. Price 7s. 6d.

[2] "How to be Happy in Berlin." By John Chancellor. Pp. 198, with chapter headings and a map. London: J. W. Arrowsmith (London), Ltd., 57, Gower Street, W.C. 1. 1930. Price 3s. 6d.

[3] "Picturesque Touring Areas in the British Isles." By Richard Wellbye. With a Foreword by Harold W. Eley. Pp. 272, with 8 aqua etchings and numerous pen-and-ink drawings by E. Margaret Holman and 12 pictorial sketch maps by H. A. Powell and W. E. Taylor. Published by Ed. J. Burrow and Co., for the Dunlop Rubber Co., Ltd., Fort Dunlop, Birmingham; at Cheltenham and Central House, 43, 45, and 47, Kingsway, W.C. 2. 1930. Price 3s.

[4] "Joyous Pilgrimage: Being the Chronicle of a Strange Journey." By R. Francis Foster. Pp. 254, with 35 full-page illustrations. London: Elkin Mathews and Marrot, Ltd., 54, Bloomsbury Street, W.C. 1. 1930. Price 7s. 6d.

green and pleasant ways. The illustrations add greatly to the attractiveness of a work which it is a privilege to possess.

Mr. Robert R. Hyde has provided a picturesquely written account of the development and conduct of the Duke of York's Camp for Boys successfully held for several years at New Romney.[1] The work is a charming record of camp life which all campers should read, and especially those who are interested in camping for adolescent boys. The sketches and reproductions of photographs add to the value of a live book. The appendix contains useful information and suggestions regarding sports for boys.

"Nature Rambles" is the first member of the "Come with Me" new series of illustrated manuals intended for lovers of the countryside.[2] Mr. Step, the author, has provided parents, teachers and others who desire to develop Nature study among the young with an inspiring and informing introduction. We particularly commend this attractive work to the notice of those responsible for the conduct of open-air schools. The illustrations alone make this little book a notable one.

"The Medical Annual," now in its forty-eighth year, fully maintains its unique position as an indispensable year-book of up-to-date information and guidance in a form which every practitioner will appreciate and find of service.[3] The work furnishes a reliable review of progress in the science and art of medicine and surgery, and is a comprehensive therapeutic directory, alphabetically arranged ready for rapid reference. This year's issue contains a portrait and sketch of the late Dr. Percy R. Wilde, founder and first editor of the "Medical Annual." The volume contains much that will appeal to those interested in tuberculosis. Pulmonary tuberculosis is surveyed by Dr. W. H. Wynn, who has provided a helpful account of B.C.G. and new methods of treatment, and recent work relating to surgical tuberculosis is considered by Professor John Fraser. There is a good directory of sanatoria. The other articles furnish admirable epitomes, and the numerous illustrations, several in colour, add greatly to the value of the work. The list of thirty-three names of those appearing as contributors indicates the authoritative character of this skilfully prepared epitome of new developments in medicine. No practitioner can afford to be without the "Medical Anuual."

Dr. A. K. Chalmers, formerly Medical Officer of Health for Glasgow, has written a valuable survey of the city's health conditions, 1818-1925, in which he furnishes a general survey of sanitation in the nineteenth century.[4] There are admirable studies relating to pulmonary and other forms of tuberculosis and their institutional manage-

[1] "The Camp Book: Being some Account of the Duke of York's Experiment." By Robert R Hyde. Pp. 96, with portrait frontispiece of the Duke of York and numerous illustrations. London: Ernest Benn, Ltd., 154, Fleet Street, E.C. 4. 1930. Price 3s. 6d.

[2] "Nature Rambles: An Introduction to Country-Love—Winter to Spring." By Edward Step, F.L.S. Pp. 152, with 16 coloured and 15 half-tone plates and 60 text illustrations. London: Frederick Warne and Co., Ltd., Chandos House, Bedford Court, Bedford Street, Strand, W.C. 2. 1930. Price 2s. 6d.

[3] "The Medical Annual: A Year-Book of Treatment and Practitioner's Index." Edited by Carey F. Coombs, M.D., F.R.C.P., and A. Rendle Short, M.D., B.S., B Sc., F.R.C.S. Pp. lviii+652+167, with many text illustrations and 61 plain and coloured plates. Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. 1930. Price 20s.

[4] "The Health of Glasgow, 1818-1925—An Outline." By A. K. Chalmers, LL.D., M.D. Pp. xix+462. Printed by the Authority of the Corporation. 1930.

ment. The whole publication is one of which Glasgow may be proud, for it indicates how this progressive city has been a leader in health matters. Dr. Chalmers has accomplished a notable service in preparing such a remarkable report. We particularly commend it to the attention of medical officers specially interested in the tuberculosis problem.

The publishing house of Ed. J. Burrow and Co., of London and Cheltenham, is rendering a valuable service to doctors and others who are called upon to advise in regard to climatic centres, health and holiday resorts, educational travel, motoring, and recreative wanderings. We have received three numbers of the excellent "Burrow" series of Guides.[1] "The British Isles" (price 3s. 6d.), issued in association with the famous White Star Line, now in a fourth and enlarged edition, is a comprehensive handbook, which while of much interest and assistance to dwellers in the Homeland, will be of special service to Americans and visitors from overseas who desire information and direction in a condensed form regarding Britain's principal cities and towns and centres noted for their natural beauty, historical association, and antiquarian features. There is a concise description of London, also a special section on American pilgrim shrines, lists of cathedrals, old churches, castles, and noted country seats, and much other local and general information not to be found in ordinary guide books. The maps and plans are particularly praiseworthy features. "Burrow's Handy Guide to Europe" (price 7s. 6d.), now in its second edition and dedicated to all English-speaking tourists, is a compact, concise travel companion which can be carried in the coat pocket, giving the maximum amount of serviceable information in the minimum of space, and covering the whole of Europe with the exception of Russia. Americans as well as Britishers will welcome this practical companion for a European tour. It contains admirable maps and plans, particulars relating to travel facilities, notes, customs, currency, and much else likely to interest and facilitate touring for health, instruction, and pleasure. "Continental Touring," by Charles L. Freeston, F.R.G.S. (price 4s. 6d.), is an indispensable book for travellers by road and rail, affording data regarding passports, visas, and other essential matters, with suggestions about customs, Channel crossings, hotels, railway journeys, arrangements as to cars, and many practical tips. The work is the outcome of the author's thirty-four years of road travel abroad. Before entering on a Continental tour this helpful book should be studied.

Health and holiday seekers who are arranging to visit Scotland this season should obtain copies of the instructive publications issued by the London, Midland and Scottish Railway Company. These include "Clanland," a coloured picture book illustrating the chief clans of the Highlands, with particulars regarding their badges, mottoes, costumes, tartans, lands, and history; "The Royal Scot and Her Forty-nine Sister Engines," by S. P. B. Mais, which is an illustrated directory of the chief railway engines which travel the iron road between London and the chief centres in Scotland; "The Track of the Royal Scot," in two parts, provide descriptions, with illustrations, of the districts between the railway route which links Euston with Carlisle and

[1] A list of the "Burrow" Guides and other publications can be obtained on application to Ed. J. Burrow and Co., Ltd., Central House, 43, 45, and 47, Kingsway, W.C. 2, or Imperial House, Cheltenham.

Carlisle with Edinburgh and Glasgow; "The Handbook to the Highland Section of the London, Midland and Scottish Railway" is an indispensable illustrated guide with helpful maps which should be in the hands of everyone who adventures into the glories of the fascinating Highlands; and "Scotland for the Holidays," which is an album of full-page beautiful pictures, accompanied by descriptions, of some of the finest of Scotland's health and holiday resorts. These and other publications of the L.M.S.R. relating to Scotland may be obtained on application to the office of the Divisional Passenger Commercial Superintendent of the London, Midland and Scottish Railway Company.

The delectable Duchy of Cornwall provides a health and holiday district which appeals not only to Cornishmen but to men and women coming from all parts of the country. "The Cornish Guide," published by the "Come to Cornwall" Association, the head offices of which are at 22, Market Street, Falmouth, a handsome volume printed by Messrs. Eyre and Spottiswoode, Ltd., East Harding Street, Fleet Street, E.C. 4, is the official organ of the "Come to Cornwall" Association and Federation of Chambers of Commerce and Traders' Associations of Cornwall. This fine volume furnishes good reasons for its claim that Cornwall provides Britain with its finest playground. The numerous beautiful pictures with instructive and happily presented text, together with numerous informing advertisements, make this remarkable publication an ideal guide and companion for all visiting Cornwall.

The Great Western Railway has published, through J. M. Dent and Co., Ltd., a fine series of a dozen handbooks of the chief cathedrals, abbeys, and famous churches situated in centres on the G.W.R. system (price 1s. each volume). These charming pocket manuals are edited and illustrated in half-tone and line by Gordon Home. Some idea of the wide scope of the collection will be indicated by an enumeration of titles—"Exeter, Truro, and the West"; "Chester, Manchester, and Liverpool"; "Gloucester, Tewkesbury and District"; "Wells, Glastonbury, and Cleeve"; "St. Paul's and Southwark"; "Hereford and Tintern"; "Oxford and Neighbourhood"; "St. David's, Llandaff, and Brecon"; "Winchester and Salisbury"; "Worcester, Malvern, and Birmingham"; "Bristol, Bath, and Malmesbury"; and "Westminster Abbey." The text of each volume is picturesque, informing, and expresses the old-world atmosphere of refinement and repose associated with ancient religious edifices. The illustrations, taken from new photographs and fresh drawings, are particularly appealing and instructive. For many health-seekers and holiday-makers desiring to visit the fascinating, restful, and beautiful cities and towns of the West Country served by the G.W.R. this remarkable collection of guides and companions provides ideal and indispensable handbooks.

Messrs. T. B. Browne, Ltd., the well-known firm of advertising agents, have just issued the 44th annual edition of their monumental and authoritative Guide for Advertisers.[1] This admirably printed and ably compiled volume will still further establish the reputation of this invaluable reference book to be considered the standard press directory of the world. All interested in newspapers and periodicals and matters relating to printing, publishing, advertising and associated activities should procure a copy of this indispensable book.

[1] "The Advertiser's ABC." Pp. 739. Compiled and published by T. B. Browne, Ltd., 163, Queen Victoria Street, E.C. 4. 1930. Price 21s.

PREPARATIONS AND APPLIANCES.

DIAGNOSTIC AND HYGIENIC APPLIANCES AND THERAPEUTIC PREPARATIONS.

WATSON'S "VEDET" POCKET PRISM TELESCOPE is a novelty which will appeal to many readers of this JOURNAL. The pleasure derived from the use of the modern prism binocular glass is generally appreciated, but many delicate and enfeebled persons deny themselves the advantages because such glasses are heavy, awkward to carry, always seem to be in the way, and, if they are laid aside for a few minutes, it is likely that someone else will appropriate or borrow them. The consequence is that they are not used to the extent that their merits justify. The "Vedet" pocket prism telescope overcomes most of the objections to be found in the binocular glass.[1] It is contained in a soft leather case which goes conveniently into the coat pocket. Its weight is less than half that of a binocular glass—viz., 7 ounces—and the total length is 4 inches. The construction and defining power are similar to those of the prism binocular glass. Magnification is eight diameters, which is the maximum for a glass which is held in the hands unsupported. In this pocket telescope, therefore, will be found nearly all the advantages that are associated with the bulky binocular glass, the only difference being that one eye is used instead of two, and the full stereoscopic effect is not obtained. Information that can be obtained with the "Vedet" pocket prism telescope by the holiday maker, naturalist, or sportsman will more than justify the outlay. The "Vedet" constitutes an ideal present for doctors, nurses, patients, and others, especially those engaged in health travel or leading an open-air life. (The price, with soft pocket case and cord sling attached to the glass for carrying round the neck, is £3 17s. 6d.)

The KOMPAKT HYGIENIC PROVISION BOX is a practical novelty which will be approved by doctors and sanitarians as well as by those who enjoy picnics in the country.[2] It is a convenient closed receptacle made of the best white Stafford semi-porcelain for keeping clean and fresh a little lunch or any perishable food. The cover serves as a tray or saucer, and a ring in one corner serves to hold the foot of a cup. When closed a leather strap keeps plate tight and portable.

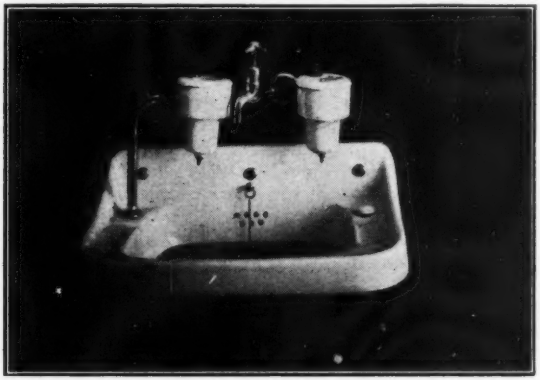
THE KOMPAKT HYGIENIC PROVISION BOX.

The ELTRON ELECTRIC HOT WATER GEYSER is a novel and practical appliance which only needs to be known by doctors, dentists, nurses, and other professional workers to be appreciated. The chief features of this ingenious electric heater are indicated in the accompanying figure. It is so

[1] Full particulars regarding the "Vedet" Pocket Prism Telescope can be obtained on application to W. Watson and Sons, Ltd., 313, High Holborn, W.C. 1.

[2] The "Kompakt" Hygienic Provision Box is supplied by Brice Rogers, 55A and 57, Dartmouth Road, Forest Hill, S.E. 23.

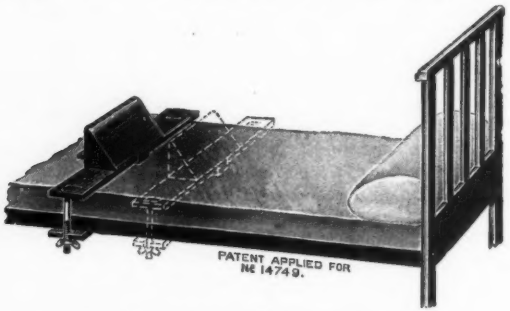
designed and constructed as to provide various degrees of hot water. The apparatus is attached to the ordinary water system. The electric power can be obtained from the wall plug or lamp socket, and there



THE ELTRON ELECTRIC HOT WATER GEYSER.

is no danger of shocks or explosions, for the electric current is turned off when the flow of the water is stopped. The consumption of current is said to be one unit per hour, and any voltage can be supplied. The appliance is composed of the best quality of porcelain, and there is no possibility of contamination of the water. (Price complete £2 12s. 6d.)[1]

The "CROMMELIN" BED FOOT-REST, designed by Dr. Hugh F.



THE "CROMMELIN" BED FOOT-REST.

Ealand, is an ingenious and serviceable appliance, the chief features of which are indicated in the accompanying figure.[2] It will prove in-

[1] Full particulars regarding the Eltron Electric Geyser can be obtained on application to Eltron, Ltd., 79, Queen Victoria Street, E.C. 4

[2] The makers of the Crommelin Bed Foot Rest are Messrs. Allen and Hanburys, 48, Wigmore Street, W. 1, from whom full particulars can be obtained.

valuable in increasing comfort for many consumptive and other bed-fast tuberculous patients, and in facilitating their nursing. The appliance consists of two slats of wood, one placed under the iron frame of the bedstead, the other, to which the foot-piece is attached, is placed above the mattress. The slats are clamped at each end with readily adjusted screws. (The price is in plain oak £1 10s., and in stained and polished oak £1 17s. 6d.)

The CERTA BED TRAY will be a boon to many patients, for it provides a novel, handy, effective bedside waiter, the chief features of which are indicated in the accompanying figure.[1] It consists of a strongly constructed metal or oak tray on a steel bracket-arm, which is fixed to the bedpost and can be adjusted at any height and in any position or folded back against the wall when not in use. This novelty will be welcomed both by the sick and the sound. (The price of the Metal Tray post free is 11s. 6d.; the Oak Tray 13s. 6d.; and with extension arm, 15s.)

THE CERTA BED TRAY.

THE CALVERT VAPOUR DISINFECTOR is a scientifically designed appliance for the carrying out of chemical disinfection of rooms and their contents.[2] The disinfector is indicated in the accompanying figure and makes detailed description unnecessary. The appliance enables 8 ozs. of Calvert's vapourizing fluid to be volatilized in four minutes, thus producing a concentrated vapour of high germicidal power. Tests have shown that, while possessing disinfecting properties of high degree, the vapour is harmless to individuals, and is not deleterious to decorations, fabrics, metals, and the like. This disinfector will be of service in ordinary habitations as well as in hospitals, sanatoria, nursing homes, and in schools, clubs, and other institutions. (The price complete is 25s.)

THE CALVERT VAPOURIZER.

ANTISEPTIC CREAM, supplied by the well-known firm of Hewlett and Son, is an elegant, sedative, antiseptic, emollient preparation which has met with much favour in hospital and sanatoria service as well as for patients in the course of general practice.[3] It contains oleate of zinc, boric acid, wool fat, etc., and is a reliable and healing application for many forms of irritable, congestive, and other cutaneous troubles. It is available in collapsible tubes or can be obtained in bulk.

[1] Particulars regarding the "Certa" Bed Tray can be obtained from the makers, the Certa Manufacturing Co., Baltic Road, Tonbridge, Kent.

[2] Full particulars with reports regarding the Calvert Vapour Disinfector can be obtained on application to F. C. Calvert and Co., Ltd., P.O. Box 147, Manchester.

[3] Specimens and particulars of Cremor Antisepticus, Hewlett's, can be obtained on application to C. J. Hewlett and Son, Ltd, 35-42, Charlotte Street, E.C. 2.

THE "HOOKITON" is a novel bed-table which will prove a much appreciated additional equipment for the sick-room.[1] It is a movable, detachable, wooden folding table which can be attached to the end of a bed by means of covered hooks, which prevent any damage being done to the bedstead. The "Hookiton" can be obtained in standard sizes

THE "HOOKITON" FOLDING BED-TABLE.

of 42 inches by 15 inches for double beds and 33 inches by 15 inches for single beds, but for hospitals, sanatoria, and other institutions special dimensions can be arranged. The table can be obtained in oak or mahogany finish. (The price is 25s. each, carriage paid and packing free.)

The PARAGON DOOR CONTROL should be appreciated in sanatoria and open-air schools, where not infrequently the wind leads to slamming and other difficulties with doors.[2] This novelty provides a patent door control in the form of a simple appliance which is fixed to door and doorway and enables the door to be left open or fixed at any desired angle. (The price is 3s. 3d., post free.)

THE ALEXANDER CORNER CAPS are ingenious, simple, inexpensive contrivances for keeping the corners of rooms, wards, stairs, and other places free from accumulation of dust and dirt.[3] (The price is 1s. 6d. per box of one dozen caps.)

THE TRIPLEVA NUTCRACKERS is a scientifically devised novelty which will be welcomed by all who enjoy walnuts, brazils, and other forms of thick shelled nut.[4] The crackers are constructed on the lever principle, and exert great and graduated pressure so that nuts of all sizes and shapes can be broken without crushing the kernel. This inexpensive and reliable appliance only requires to be known to be appreciated. (The price is 3s. 6d.)

[1] The "Hookiton" table is manufactured by Heard and Partners, Ltd., 100, Victoria Street, Westminster, S.W. 1, from whom an illustrated descriptive circular can be obtained.

[2] The Paragon Patent Door Control is supplied by R. Jewhurst, 61, Northdown Road, Margate, from whom full particulars can be obtained.

[3] Particulars regarding the Alexander Corner Caps can be obtained from the makers, R. S. Newton and Co., 41, Fountain Street, Manchester.

[4] The Tripleva Nutcrackers is supplied by the Osborn Engineering Co., Atlanta Works, Gosport, Hants.

THE MARVEL WINDOW CLEANER is a practical labour and time-saving novelty which will be appreciated in many institutions as well as for service in private houses.[1] It affords an excellent aid in the cleaning of motor-car windows. It consists of an aluminium receptacle holding a supply of water which automatically moistens the wool felt cleaning surface of one side of the cleaner, while the other, a moulded rubber squeegee with double edge reversible, dries and polishes.

THE EVER-READY ELECTRIC SPECIALITIES only need to be known to be approved.[2] They will be of special service to doctors, nurses, and patients, particularly in connection with hospital and sanatorium service. Medical practitioners in country districts who employ a bicycle for night work will find the novel and effective Ever-Ready Electric Cycle Lamp very advantageous. It provides an excellent light from a dry battery, which can be replaced or refilled as required.

THE SURGERY TOWEL, manufactured by the house of Boyd and Co., has been provided to meet the special requirements of doctors and nurses.[3] The towel is very extensively used in hospitals, sanatoria, dispensaries and elsewhere, and can be strongly recommended, for the size, 24″ × 35″, is convenient, the material is absorbent and free from fluff, both ends are hemstitched, and considering the quality the price is low (18s. 6d. per dozen).

The PROBAK BLADES will be welcomed by users of razors of the safety type.[4] They are made in England, of new form, with three novel shaped holes which allow for extra weight and increased strength, so providing means for sure, smooth, effective cutting. These excellent steel blades will be approved for use in connection with safety razors used for surgical purposes, and in hospitals, sanatoria, and nursing homes patients will find them of service. (The price of a packet of five blades is 2s.)

BULAC is a reliable laboratory preparation of the *Bacillus bulgaricus* and the *Bacillus acidophilus*, and provides a ready means for the production of acid or sour milk, practically identical with Yoghurt or Yaort, the curdled milk used in Bulgaria and other countries for many generations, and enthusiastically advocated by Professor Metchnikoff in his great work on "The Prolongation of Life."[5] It is now recognized that not a few of the ills which afflict man are due to auto-intoxication, and mainly arise from intestinal putrefactive processes leading to the production of various prejudicial toxins. In many consumptive and other tuberculous subjects gastro-intestinal troubles develop, and for such Bulac is oftentimes of considerable service. We have found it advantageous in the treatment of tuberculous children. The New Research

[1] The Marvel Window Cleaner is supplied by The Gower Galleries, 94, Gower Street, W.C. 1.

[2] Full particulars regarding the "Ever-Ready" series of electric lamps can be obtained from the Ever-Ready Company (Great Britain), Ltd., Hercules Place, Holloway. N. 7.

[3] Full particulars regarding the Surgery Towel can be obtained on application to Boyd and Co., the Irish Linen Warehouse, 6, Adelaide Street, Belfast, Northern Ireland.

[4] The Probak Blades are made by the Autostrop Safety Razor Co., Ltd., 197-207, City Road, E.C. 3.

[5] Full particulars regarding Bulac, with directions for the preparation of a regular supply, can be obtained on application to the Managing Director, Mr. Francis Ashley, The New Research Company, 38A, St. Phillip's Avenue, Worcester Park, Surrey.

Company is now providing genuine Bulgarian Lactic Bacillus Culture in a convenient form, and in sufficient amount for a three months' supply of Bulac (price 12s. 6d., post free).

THE "WELLCOME" SCHICK TEST PRODUCTS will be of service in open-air schools and other institutions dealing with children, as they enable a distinction to be made between individuals susceptible and those immune to diphtheria. The Schick Test Toxin is available in two forms—(1) undiluted, in capillary sets; and (2) diluted, ready for use.[1]

ANTIPHLOGISTINE is a justly popular local kaolin preparation which serves as an effective antiphlogistic poultice in pleurisy, pneumonia, and other thoracic troubles, relieving pain, providing the support and comfort of a warm preparation which preserves its heat for a long time, regulating the vascular supply, and with all its advantages being clean, antiseptic, soothing, easily applied, and inexpensive.[2]

COMPOUND GLYCERIN OF THYMOL PASTILLES are elegant, strong, effective preparations which slowly dissolve in the mouth, so providing what is equivalent to a prolonged antiseptic mouth wash and gargle.[3] Each pastille contains the equivalent of a third of a teaspoonful of glycerin of thymol. The antiseptic value of these pastilles has been reinforced by the addition of amyl-meta-cresol, which has a Rideal-Walker coefficient of 250. These will be of real service in the treatment of various derangements of mouth and throat met with in many tuberculous subjects.

AUBERGIER'S SYRUP and PASTE OF LACTUCARUM are elegant French preparations the essential elements of which are obtained from *Lactuca virosa altissima*, the giant lettuce.[4] They are particularly serviceable in soothing troublesome coughs arising in the course of affections of the respiratory tract and in various irritable nervous conditions.

"COLLOSOL" IODINE AND BLACK CURRANT PASTILLES are elegant, flavoured, antiseptic, astringent, and palatable confections for use by both adults and children in catarrhal, septic, and other irritable conditions of the mouth and throat.[5] Each pastille contains approximately one-tenth of a grain of iodine as Collosol iodine, and when dissolved gradually exerts a particularly soothing influence on the painful and congested mucous membrane. (The price is 1s. 3d. a box.)

IODINE-MEDOL is a non-toxic and non-irritant, stainless, antiseptic ointment, which depends for its disinfecting constituents on iodine and hycol. Hycol is a powerful germicide of coal-tar origin which possesses a Rideal-Walker coefficient of 18/20. The base employed in this ointment is non-lardaceous, and consists of oxygenated paraffinoid

[1] Full particulars regarding the "Wellcome" preparation for carrying out diphtheria prophylaxis can be obtained on application to Burroughs Wellcome and Co., Snow Hill Buildings, E C 1.

[2] Specimens and particulars of Antiphlogistine can be obtained on application to the Denver Chemical Manufacturing Co., 41, St. Ann's Road, E. 3.

[3] Compound Glycerin of Thymol Pastilles are supplied in small tin cases which can be carried in the pocket, and are supplied by Boots, the Chemists, at all branches.

[4] Aubergier's Syrup and Paste of Lactucarum are made at the chemical laboratories of Comar and Co., 20, Rue des Fossés-Saint-Jacques, Paris, and particulars can be obtained from F. H Mertens, 65, Holborn Viaduct, E.C. 1.

[5] Collosol Iodine and Black Currant Pastilles are manufactured at the Crookes La' oratories (British Colloids, Ltd.), 22, Chenies Street, W.C. 1.

hydrocarbons which are rapidly absorbed by the skin with deep penetration.[1] It is a serviceable local application which only needs to be known to be appreciated.

Reid's PINE-TAR SKIN SOAPS are excellent hygienic preparations, which will prove of service not only as a refreshing cleanser and prophylactic, but as effective agents in the treatment of certain skin disorders.[2] They are super-fatted, soothing, antiseptic, and provide an excellent lather. Special reference should be made to the admirable form of "Pine-Tar" Shaving Soap, free from all irritation, protective, and suitable for all razor blades.

MEDICINAL GLUCOSE[3] is now being extensively employed in cases of malnutrition and carbohydrate starvation, and especially for the feeding of invalids and infants. As a reliable pure dextrose this carbohydrate promises to be of value in a number of disorders as providing a source of energy. Possibly in the treatment of selected cases of tuberculosis it may be of service; for it is readily assimilable, and has proved helpful in a number of derangements met with in tuberculous subjects.

MORELTO[4] is a liquid chocolate of delicious flavour and aroma, nourishing, and providing for the making of a stimulating drink or the provision of various attractive table delicacies. It is manufactured from pure cane sugar inverted into honey form, together with chocolate ingredients and special flavouring. This preparation will be useful in supplying the sick with appetizing food and drink, and in providing the sound with chocolate in forms which stimulate and nourish. (The price per bottle is 10½d. and 1s. 3d.)

SUNNYCOMB is a new fruit-sugar confection which will be appreciated by children.[5] It is a palatable, wholesome, and inexpensive mixture of dextrose and lævulose, providing essential carbohydrates in an easily digested, assimilable, and inexpensive form.

[1] Iodine-Medol is manufactured by Pearson's Antiseptic Co., Ltd., 61, Mark Lane, E.C. 3, from whom samples may be obtained on application.

[2] Particulars regarding Reid's Soaps can be obtained from the manufacturers, Thomas Reid and Sons, Ltd., 90, Smith Street, Glasgow.

[3] An excellent form of Medicinal Glucose is supplied by the British Drug Houses, Ltd., who also supply an instructive booklet regarding its nature and uses.

[4] Morelto is supplied by the Chocolate Products Co. Ltd., 24 and 25, Runton Street, N. 19.

[5] Sunnycomb is manufactured by Macfie and Sons, Ltd., 34, Moorfields, Liverpool.

THE OUTLOOK.

CARE AND AFTER-CARE SCHEMES IN TUBERCULOSIS.

THE recently-issued Report of the Employment Committee of the Joint Tuberculosis Council on "Care and After-Care Schemes in Tuberculosis" is a document of much practical importance, and is based on an extensive investigation of the subject.[1] In no other disease do we find economic problems so intimately bound up with medical problems as in tuberculosis. In this connection it is pointed out that after-care work, when undertaken by a committee alive to its importance and who are prepared to explore all possibilities of care and after-care schemes, is sufficiently important to become an integral part of tuberculosis schemes. Various schemes have been formulated by After-Care Committees for the employment of consumptives, but greater efforts should be made in their areas for the reabsorption of the patient into his previous occupation, if suitable, or in some branch of his previous occupation. This is a very important factor. But what can be done for the remainder? There are, the report states, three other channels into which the consumptive may be steered in attempting to land him on economic ground. He may be employed under an authority, state-aided or voluntary, or in some sheltered position; he may be allowed to work at an urban or municipal workshop; or he may be admitted to one or other of the village settlements specially designed to meet his requirements, both medical and economic. Some local authorities have taken a step in the right direction by employing ex-sanatoria patients on their staff, as at Liverpool, London, Hull, etc. This is a procedure which should be very widely followed by other local authorities throughout the country. The employment of ex-patients on the staff of sanatoria is to be highly commended, and the majority of medical superintendents are in favour of this. Medical results in the workshops at the Factory in the Fields, Leeds, and the Spero Workshops in London have been satisfactory, but none of these have yet been self-supporting. At Leeds it has cost the Corporation about £1 a week for every man so employed. Care committees have often spent on individual cases much more than this sum without any real advantage. Village settlements have, in the Committee's opinion, passed the experimental stage, and may now be discussed in the light of their contribution to the problem of tuberculosis. The success of a settlement depends on factors met with but rarely in the realm of medicine and economics. If the settlement idea is to extend, as it should, each separate unit must grow from a small nucleus, the centre of which will be a scheme for occupational therapy. It must not come to be a refuge

[1] The report on "Care and After-Care Schemes in Tuberculosis" is signed by Drs. Jane Walker, D. P. Sutherland, H. Vallow, G. Jessel, P. W. Edwards, C. O. Hawthorne, and J. B. McDougall; the last named acted as convener of the Committee. A copy of the report can be obtained from the Secretary, Preston Hall, Aylesford, Kent (price 1s. 6d. post free).

for substandard labour, but remain part of the mechanism for continued treatment. It is strictly as a community for restoration to health and working capacity that the village settlement approaches to the perfect solution of the medical and economics problem of the consumptive.

ACTINOTHERAPY.

Considerable discussion has recently taken place in this country, in America, and in other lands regarding the advantages and disadvantages of artificial light application or actinotherapy in the treatment of tuberculosis and other diseases. We have received an important and informing communication on the subject, issued by the United States Public Health Service, from which we reproduce the following: "Since the amount of natural light from the sun, and especially its ultra-violet ray content, varies with the geographical location, the season of the year, and such local conditions as the amount of dust, smoke, and moisture in the atmosphere, under some conditions reliance may be placed on sources of artificial radiation. These sources are generally called lamps or radiators. There are different types of lamps used for the production of artificial light for therapeutic purposes: first, those that emit heat, light, and ultra-violet rays in approximately the same proportion as sunlight; second, those in which ultra-violet rays predominate; and third, those that emit light and heat, but little ultra-violet light. The lamps of the *first* type have white-hot filaments, or electrodes, which radiate light and heat, and have also incandescent mercury vapour, or a carbon arc, which radiates ultra-violet rays. In these lamps the incandescent mercury vapour, or the carbon arc, is shielded from the person using it by a globe, or plate, of a special kind of glass which cuts off the very short ultra-violet rays which might be harmful. These lamps are so designed that the ultra-violet, light, and heat radiations emitted by them are combined, as nearly as possible, in the same proportions as in natural sunlight. Since the radiation from them is very similar to sunlight, they may, to a certain extent, be used in place of, or as a substitute for, sunlight. If these lamps are to be used in the treatment of any disease or over long continued periods of exposure, one should have the advice of a competent physician. At all times caution must be observed in exposing oneself to any lamp. When using these lamps it may be necessary to use goggles to protect the eyes. The *second* type of lamp, such as the unscreened mercury vapour, or the unscreened carbon arc lamp, besides light, heat, and antirachitic ultra-violet rays, emits a large amount of ultra-violet rays of very short wave length. Such lamps should only be used upon the advice and under the direction of a physician. The large amount of antirachitic ultra-violet light emitted by them makes them very useful when operated by the physician, but dangerous when used by the layman without the advice of a physician. For the same reason such lamps should never be used without goggles to protect the eyes. Excessive or improper use of ultra-violet rays may cause serious injury to the eyes, injury to the skin, serious symptoms in persons with low blood pressure, and unfavourable effects in persons with early tuberculosis. Exposure to ultra-violet radiation may cause restlessness and, in overdoses, anæmia. Severe burns are also sometimes experienced. The *third* type of lamp is similar to the ordinary incandescent lamp used

in electric lighting. It emits both light and heat. The very small amount of ultra-violet light emitted by it is of long wave length and is negligible in quantity. The rays of light and heat from these lamps heat the skin and the superficial tissues. They have been found to be useful in the treatment of rheumatism and similar troubles. The only danger from them is that of a burn such as would be experienced by exposing the skin in front of a hot fire. It will be evident from this discussion of the different types of lamps in use that a lamp that would be useful for one purpose would not be useful for another, and indeed might have a harmful effect. It is evident that a person without medical training should not select and use a lamp at random, but before purchasing and using a lamp should consult his physician."

TUBERCULOSIS AND RESEARCH.

The yearly Report of the Medical Research Council is always a publication of exceptional value to all seeking the scientific advancement of medicine. The recently issued fifteenth Report of the Council, of which Lord D'Abernon is Chairman and Sir Walter M. Fletcher is Secretary, with Lord Mildmay of Flete as Treasurer, is of exceptional interest.[1] After a general introduction and survey of the chief features of the work of the past year the Report proceeds to present sections dealing with The Determination of Biological Standards and the Methods of Biological Assay and Measurement, Experimental Medicine and the Research Work of Clinical Units, Research Schemes in Specific Subjects, and Industrial Health. There are also particulars of Travelling Scholarships. A survey is provided of the work undertaken under the auspices of the two committees dealing with tuberculosis, of which Dr. A. S. MacNalty, of the Ministry of Health, acts as Secretary. Dr. A. Stanley Griffith, in association with Professor J. B. Buxton, is writing the valuable studies on the immunizing of cattle by the B.C.G. vaccine of Calmette and Guerin. It has been definitely proved that "a high degree of resistance to tuberculosis can be conferred upon a calf by either inoculation or oral administration of B.C.G." Dr. Griffith has shown that "phthisis in the human being may be caused by the Carne tubercle bacillus, and that this form of phthisis for some reason as yet unexplained is commoner in Scotland than in England." Dr. L. J. Harries is taking up experiments on the effect of dietetic deficiencies upon the susceptibility to tuberculosis. Professor S. L. Cummins, of the Welsh National Memorial Association, is continuing his work on laboratory methods for gauging the progress of cases of tuberculosis. Dr. R. L Vollum, in association with Professor Dreyer of Oxford, is studying the changes in virulence of certain cultures of tubercle bacillus. Reference is made to a number of other promising investigations. There are sections on Tuberculin, Bovine Tuberculosis in Scotland, and The Biological Actions of Light. In the part devoted to Industrial Health reference is made to investigations undertaken by Mr. H. C. Weston with the object of testing the value, for the health of factory workers, of using special window glass which is transparent to ultra-violet rays. Particulars are given of the Research Fellowships in

[1] "Committee of the Privy Council for Medical Research: Report of the Medical Research Council for the Year 1928-1929." Pp. 153, with frontispiece of the National Institute for Medical Research at Hampstead, London, N.W. 3. London: His Majesty's Stationery Office. 1930. Price 3s.

Tuberculosis, established by Mrs. Odo Cross. These are to be awarded to suitably qualified British subjects who intend ultimately to devote themselves "to the advancement, by teaching or research, of the curative or preventive treatment of tuberculosis in all or any of its forms." They will ordinarily be tenable in some country abroad, and for a period of one year in the first instance.

TUBERCULOSIS AMONG SCHOOL TEACHERS.

The *Medical Officer*, in its issue for May 10, in a note on the prevention of tuberculosis among those engaged in teaching in schools, refers to regulations approved by the German Federal Bureau of Health and issued to the German States by the Ministry of the Interior. The suggestions are as follows: (1) All persons who intend to enter the teaching profession as teachers in public or private primary, middle, or higher schools, or in occupational schools, must present a health certificate issued by a health official who is a physician before they begin their course of training. (2) Before entering on his duties as a teacher, every applicant must present a second health certificate issued by an official physician; also on being transferred from a public to a private school. An examination by an official physician must likewise be made if, in case of frequent absence from school on the part of a teacher, especially in disorders of the respiratory organs, the school physician, health officer, or school inspector, on account of suspected tuberculosis, makes a justifiable demand to that effect. If the official physician, as set forth in paragraphs 1 and 2, considers, on the basis of his examination, that an examination by a specialist is necessary, he shall have the authority to demand it. The greatest importance should be attached to the roentgenologic examination. There should be close co-operation with the tuberculosis welfare centres. (3) Neither teachers nor janitors, nor any other employees who come in contact with pupils, may be employed in a school if they are affected with pulmonary or laryngeal tuberculosis. In like manner, tuberculous pupils may not enter the schoolrooms. Persons who have been affected with contagious tuberculosis may not be readmitted as teachers in a school unless they can present a health official's certificate showing that no danger from contagion exists. The school physician must be informed of every case of contagious tuberculosis in a teacher or in any of the persons mentioned in paragraph 1 and of any person's readmission to any school. (4) Proper treatment of tuberculous teachers should be facilitated by the authorities.

NOTES AND RECORDS.

The Tuberculosis Study Tour in Canada and the United States promises to be an event of considerable educational service. The following have been awarded the Travelling Fellowships granted by the Sun Life Assurance Company of Canada for participants in the tour organized by the Joint Tuberculosis Council for August next: Drs. R. J. Allison, F. J. C. Blackmore, J. E. Chapman, B. R. Clarke, F. J. H. Coutts, A. N. Cox, J. R. Dingley, W. H. Dickenson, J. R. B. Dobson, P. W. Edwards, T. R. Elliott, E. T. D. Fletcher, W. C. Fowler, L. S. Fry, C. G. R. Goodwin, J. Guy, G. T. Hebert, P. Heffernan, E. N. Holmes, G. Jessel, J. Johnstone, G. Leggatt, W. E. Lloyd, J. J. Mac-

Donnell, J. D. Macfie, T. H. Martin, G. Mayberry, J. B. McDougall, J. C. McMillan, Eva Morton, E. H. A. Pask, D. A. Powell, G. B. Price, W. T. G. Pugh, J. Rennie, A. C. Renwick, W. Stobie, L. B. Stott, D. P. Sutherland, N. Tattersall, Ian S. Thomson, R. R. Trail, H. G. Trayer, A. Trimble, H. Vallow, James Watt, G. S. Wilson, R. C. Wingfield, J. E. Wood, Ernest Ward. All enquiries in regard to the tour should be addressed to Dr. Ernest Ward, Hon. Secretary, Joint Tuberculosis Council, Torquay Road, Paignton, Devon.

The National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, W.C. 1, held its Sixteenth Annual Conference on July 3, 4, and 5 at the British Medical Association House, Tavistock Square, W.C. 1. The chief subject for discussion was "The Effects of the Tuberculosis Campaign of the Local Government Act, 1929." A volume of Transactions will be issued at an early date.

The Seventh Conference of the International Union against Tuberculosis will be held at Oslo, in Norway, August 12 to 15.

The Fifth Annual Congress on Physiotherapy will be held at Liège, September 14 to 18.

The Twenty-fourth Report of the Children's Sanatorium for the Treatment of Phthisis, which is situated near Holt, in Norfolk, is an interesting record of good work carried out among fifty-eight tuberculous children during the year. The London offices are at Room 23, Carnegie House, 117, Piccadilly, W. 1.

The Ministry of Health has recently issued through H.M. Stationery Office the "Final Report of the Departmental Committee on Ethyl Petrol," price 1s., showing that "there are no reasons for prohibiting the use of ethyl petrol in this country," provided certain precautions are taken.

"The Studies from the Rockefeller Institute for Medical Research" continue to be issued periodically, providing records of recent investigations and the results of researches in the fields of pathology, bacteriology, biophysics, chemistry, pharmacology, physiology, and experimental surgery, together with reports from the department of the hospital. The last number to reach us is Vol. lxx.

Dr. J. F. Halls Dally's informing paper on "The Spas of Switzerland" has been published as a booklet by the Association of Swiss Spas.

"Village Settlements for the Tuberculous," by Dr. P. C. Varrier-Jones, is an informing paper which appeared in the April issue of the *Irish Journal of Medical Science*.

The Summer number of *Sunlight*, the journal of the Sunlight League, 29, Gordon Square, W.C., among a series of important communications, contains a number of illustrated articles on "Ultra-Cautious Ways *versus* Ultra-Violet Rays," by Sir Bruce Bruce-Porter, K.B.E., M.D.; "Sunlight in Recovery Homes," by Arthur Black, General Secretary of the Shaftesbury Society and Ragged School Union; "The Use of Rays of Light in Health and Disease," by Dr. Albert Eidinow; and "The Open-Air Settlement Plan," by the Marchioness of Aberdeen and Temair.